School of Mathematical and Computer Sciences

Postgraduate Programme Handbook

MSc/PGD Artificial Intelligence
MSc/PGD Business Information Management
MSc/PGD Computer Systems Management
MSc/PGD Data Science
MSc/PGD Information Technology (Business)
MSc/PGD Information Technology (Software Systems)
MSc/PGD Network Security
MSc/PGD Software Engineering

Dubai Campus

2019-2020

Heriot-Watt University is a registered charity in Scotland, SC026900
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PART A – CAMPUS AND PROGRAMME INFORMATION

1 SUMMARY OF KEY INFORMATION

1.1 KEY CONTACTS
Professor Ammar Kaka is the Head of the Heriot-Watt University Dubai Campus (HWUDC). There are 8 Academic Schools functioning within the Heriot Watt University Dubai Campus and each of them is managed by the Associate Head of School based in Dubai. Each Academic programme is led by a Programme Coordinator, supported by an experienced academic staff team located at the University’s campus at Dubai International Academic City. The address and contact details are noted overleaf. In the first instance, students should contact us via our Reception staff who will be pleased to help direct queries to the appropriate person.

Heriot-Watt University Dubai Campus
Dubai International Academic City
PO Box 294345
Dubai
UAE
Tel: +971 4 4358700/ 8701/ 8702
Fax: +971 4 4477344 Web: www.hw.ac.uk/dubai.htm

1.2 SIGNIFICANT DATES IN ACADEMIC YEAR
HWU operates a two twelve-week semester system as shown below:

<table>
<thead>
<tr>
<th>Activity</th>
<th>2019/20 dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome Week</td>
<td>8-14 September 2019</td>
</tr>
<tr>
<td>Semester 1 Teaching</td>
<td>15 September – 6 December 2019</td>
</tr>
<tr>
<td>Graduation</td>
<td>27-28 November 2019</td>
</tr>
<tr>
<td>Semester 1 Exams</td>
<td>9-20 December 2019</td>
</tr>
<tr>
<td>Semester 1 Break</td>
<td>22 December 2019 – 9 January 2020</td>
</tr>
<tr>
<td>Semester 2 Teaching</td>
<td>12 January – 3 April 2020</td>
</tr>
<tr>
<td>Semester 2 Break</td>
<td>5-23 April 2020</td>
</tr>
<tr>
<td>Semester 2 Exams</td>
<td>27 April – 22 May 2020</td>
</tr>
<tr>
<td>Graduation</td>
<td>7-8 July 2020 (to be confirmed)</td>
</tr>
<tr>
<td>Resit Exams</td>
<td>6-14 August 2020</td>
</tr>
</tbody>
</table>

The Teaching Timetable for each Semester would be published on the link https://www.hw.ac.uk/students/studies/timetables.htm before the start of each Semester.

All examinations take place during the assessment blocks. Resit examinations are scheduled during the summer vacation. Full details of examination timetabling are published at the campus and can be found at: http://www.hw.ac.uk/students/studies/examinations/timetables.htm

OFFICIAL UAE LOCAL HOLIDAYS & HERIOT-WATT UNIVERSITY DUBAI CAMPUS CLOSED DAYS
The official National holidays in the United Arab Emirates (UAE) are listed below. The Heriot-Watt University Dubai Campus will be closed on the approximate dates mentioned below:
Dubai Campus Holidays

<table>
<thead>
<tr>
<th>Holiday</th>
<th>Proposed HWU Dubai Campus closed days *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commemoration Day</td>
<td>1 December 2019</td>
</tr>
<tr>
<td>National Day</td>
<td>2 - 3 December 2019</td>
</tr>
<tr>
<td>New Year’s Day</td>
<td>1 January 2020</td>
</tr>
<tr>
<td>Eid Al Fitr</td>
<td>24 - 26 May 2020</td>
</tr>
<tr>
<td>Arafah Day and Eid Al Adha</td>
<td>30 July – 2 August 2020</td>
</tr>
<tr>
<td>Hijri New Year</td>
<td>23 August 2020</td>
</tr>
</tbody>
</table>

* All dates given, especially for Islamic holidays, are approximate. The exact date(s) of observation will be announced by the UAE government and confirmed by the University closer to each holiday.

1.3 LINKS TO FURTHER INFORMATION/SERVICES

Please refer to the University's websites at https://www.hw.ac.uk/ and https://www.hw.ac.uk/dubai.htm which contain detailed information about Heriot-Watt University and the Dubai Campus.

University Academic Registry: http://www1.hw.ac.uk/registry/
Online Course Material: https://vision.hw.ac.uk/
Student Self Service: https://myhwu.hw.ac.uk/
Online Enrolment: https://myhwu.hw.ac.uk/
Online Results: https://myhwu.hw.ac.uk/
Graduation: https://www.hw.ac.uk/students/studies/graduation.htm

2 WELCOME AND INTRODUCTION

2.1 Welcome from the Principal

I am very pleased to welcome you to Heriot-Watt University!

I am delighted you have chosen to study at our innovative and distinctive University. You are now part of an unparalleled global community that connects students, staff and alumni.

As one of the most progressive and international Institutions based in Scotland, here you will have the opportunity to thrive, both personally and academically, during your time with us. As a student I invite you to contribute to our future together as we continue to develop the learning and teaching experience we deliver across the world – transforming people, society and the world we live in.

Our learning environment seeks to offer the very best in terms of study programmes which apply knowledge to real world challenges, together with the latest learning technologies, and outstanding support and facilities.

As students the University wants to encourage you to see the world, then change it. We have developed opportunities for student mobility through our Go Global inter campus exchange, encouraging all our students to benefit from working and socialising in an international institution, whether at a single campus location or abroad.

Our graduates are sought by global professions and industries. The very nature of a Heriot-Watt research-informed education, underpinned by our values, ensures you will have the opportunity to develop the leadership skills and confidence, to be global citizens of the world who are specialists in their chosen field and experts in their professions.

I hope you thoroughly enjoy the experience of being a Heriot-Watt student and on behalf of all of the staff, we look forward to you commencing your studies with us.
2.2 Welcome from the Head of Dubai Campus

It is with great pleasure that we welcome you to the University’s Dubai Campus

Heriot-Watt University is proud to be here in the UAE, providing a range of high quality programmes, relevant to the Middle East region, to the UAE and to the aspirations of its people. Heriot-Watt has a long tradition of providing vocationally relevant academic programmes, with strong industry and research links. There are currently over 500 Heriot-Watt Alumni living and working in the UAE and the Gulf States as well as our current students, so you will be joining a successful and vibrant community!

We welcome you to your chosen degree programme either as a postgraduate or undergraduate student and look forward to working with you to help you achieve your personal ambitions and goals.

Professor Ammar Kaka
A Vice Principal of Heriot-Watt University and
Head of Heriot-Watt University Dubai Campus

2.3 Welcome from Head of School

I am delighted to echo my colleagues' welcome to our University and to our Dubai campus. It is also my pleasure to welcome you to the School of Mathematical and Computer Sciences. You are joining a thriving School with a strong tradition of research, scholarship and teaching in Computer Science and Information Technology. You are about to start on a well-established postgraduate programme leading to a highly regarded and internationally recognised qualification. As our student, you will enjoy the professionalism, enthusiasm and friendliness of our Dubai-based staff, confident that you are receiving the same high standards of teaching and assessment as your fellow students in Scotland.

I trust that you will find studying with us both stimulating and rewarding.

Professor Beatrice Pelloni
Head of the School of Mathematical & Computer Sciences

3 GENERAL INFORMATION ABOUT HERIOT-WATT UNIVERSITY AND THE DUBAI CAMPUS

Heriot-Watt University is an international university, based in Edinburgh, the capital of Scotland in the UK, with campuses in the north and south of Scotland, Dubai and Malaysia. The University also has a worldwide network of Learning Partners.

Wherever they are located, Heriot-Watt students have the opportunity to study programmes which will equip them to contribute immediately to the economy and wellbeing of the region in which they choose to work. This ethos of “doing things that matter” stretches right back to the origins of Heriot-Watt in 1821, when programmes were run to suit the needs of developing industries in Scotland.

The Heriot-Watt University Dubai Campus is located in the Dubai International Academic City. The University is the first to operate from this rapidly-developing site, and is offering programmes that meet the demands of the region and beyond.
The Dubai Campus is certified and permitted by Knowledge and Human Development Authority (KHDA) which is part of the Dubai Government (UAE). Heriot-Watt is running all its Programmes and activities of higher education in UAE under the rules and regulations of KHDA.

4  KEY STAFF AND CONTACT DETAILS

4.1 Campus Contacts

<table>
<thead>
<tr>
<th>Campus Contacts</th>
<th>Staff Name</th>
<th>Tel Number</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Vice-Principal of Heriot-Watt University and Head of Dubai Campus</td>
<td>Professor Ammar Kaka</td>
<td>+971 4 4358666</td>
<td><a href="mailto:provostdubai@hw.ac.uk">provostdubai@hw.ac.uk</a></td>
</tr>
<tr>
<td>Reception</td>
<td>Mr Biju Prasad/ Ms Soleil Sanchez</td>
<td>+971 4 4358700</td>
<td><a href="mailto:DubaiEnquires@hw.ac.uk">DubaiEnquires@hw.ac.uk</a></td>
</tr>
<tr>
<td>Academic Administration Office</td>
<td>Mr. Mahesh Naik</td>
<td>+971 4 4358636</td>
<td><a href="mailto:dubaiaao@hw.ac.uk">dubaiaao@hw.ac.uk</a></td>
</tr>
<tr>
<td>Visa Office</td>
<td>Mr. Ilyas Abdul Wahab</td>
<td>+971 4 4358628</td>
<td><a href="mailto:i.abdul.wahab@hw.ac.uk">i.abdul.wahab@hw.ac.uk</a></td>
</tr>
<tr>
<td>Recruitment and Admissions Office</td>
<td>Dr Kishore Sirnani</td>
<td>+971 4 4358605</td>
<td><a href="mailto:DubaiEnquiries@hw.ac.uk">DubaiEnquiries@hw.ac.uk</a></td>
</tr>
<tr>
<td>Finance Office</td>
<td>Mr Suresh Kumar</td>
<td>+971 4 4358675</td>
<td><a href="mailto:Dubai-Finance@hw.ac.uk">Dubai-Finance@hw.ac.uk</a></td>
</tr>
<tr>
<td>Transport and Accommodation Office</td>
<td>Mr Anil Kumar</td>
<td>+971 4 4358621</td>
<td><a href="mailto:Anil.Kumar@hw.ac.uk">Anil.Kumar@hw.ac.uk</a></td>
</tr>
<tr>
<td>Student President</td>
<td>Mr Soehl Mathew Abraham</td>
<td>+971 4 4358795</td>
<td><a href="mailto:council.president@hw.ac.uk">council.president@hw.ac.uk</a></td>
</tr>
<tr>
<td>Student Engagement Officer</td>
<td>Ms Nicki Mitchell</td>
<td>+971 4 4358746</td>
<td><a href="mailto:nicola.mitchell@hw.ac.uk">nicola.mitchell@hw.ac.uk</a></td>
</tr>
<tr>
<td>Library</td>
<td>Dr Ramakanta Rath</td>
<td>+971 4 4358661</td>
<td><a href="mailto:DubaiLibHelp@hw.ac.uk">DubaiLibHelp@hw.ac.uk</a></td>
</tr>
<tr>
<td>IT Office (Help Desk)</td>
<td>Mr Nidhish Cherian</td>
<td>+971 4 4358685</td>
<td><a href="mailto:dubaihelpdesk@hw.ac.uk">dubaihelpdesk@hw.ac.uk</a></td>
</tr>
<tr>
<td>Careers Development Officers</td>
<td>Ms Benita Maben</td>
<td>+971 4 4358793</td>
<td><a href="mailto:benita.maben@hw.ac.uk">benita.maben@hw.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td>Ms Kathryn Taylor</td>
<td>+971 4 4358791</td>
<td><a href="mailto:k.taylor@hw.ac.uk">k.taylor@hw.ac.uk</a></td>
</tr>
<tr>
<td>Effective Learning Advisor</td>
<td>Dr Allyson Noble</td>
<td>+971 4 4358797</td>
<td><a href="mailto:a.noble@hw.ac.uk">a.noble@hw.ac.uk</a></td>
</tr>
<tr>
<td>Disability Services</td>
<td>Ms Laetitia Grobbelaar</td>
<td>+971 4 4358796</td>
<td><a href="mailto:L.grobbelaar@hw.ac.uk">L.grobbelaar@hw.ac.uk</a></td>
</tr>
<tr>
<td>Student Advisor</td>
<td>TBA</td>
<td>TBA</td>
<td><a href="mailto:studet.advisor@hw.ac.uk">studet.advisor@hw.ac.uk</a></td>
</tr>
<tr>
<td>Dubai Student Service Centre (for all general enquiries)</td>
<td>Ms Therese Cooper O’Dell</td>
<td>+971 4 561 0311</td>
<td><a href="mailto:dubaistudentservices@hw.ac.uk">dubaistudentservices@hw.ac.uk</a></td>
</tr>
</tbody>
</table>
## 4.2 Academic School Contacts

<table>
<thead>
<tr>
<th>Point of Contact</th>
<th>Responsible Staff Name</th>
<th>Direct line/Email/ Office location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dubai Campus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Head</td>
<td>Mr Steve Gill</td>
<td>+971 4 4358761 <a href="mailto:S.Gill@hw.ac.uk">S.Gill@hw.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S3-13, 3rd floor</td>
</tr>
<tr>
<td>Deputy Academic Head</td>
<td>Dr Hind Zantout</td>
<td>+971 4 43588764 <a href="mailto:H.Zantout@hw.ac.uk">H.Zantout@hw.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S3-12, 3rd Floor</td>
</tr>
<tr>
<td>Director of Postgraduate Studies</td>
<td>Dr Mohammad Hamdan</td>
<td>+971 4 4358789 <a href="mailto:M.Hamdan@hw.ac.uk">M.Hamdan@hw.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S3-14, 3rd floor</td>
</tr>
<tr>
<td>Director of Undergraduate Studies</td>
<td>Mr Talal Shaikh</td>
<td>+971 4 4358762 <a href="mailto:T.A.G.Shaikh@hw.ac.uk">T.A.G.Shaikh@hw.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S3-42, 3rd floor</td>
</tr>
<tr>
<td>Associate Director of Learning &amp;</td>
<td>Ms Smitha Kumar</td>
<td>+971 4 4358786 <a href="mailto:Smitha.Kumar@hw.ac.uk">Smitha.Kumar@hw.ac.uk</a></td>
</tr>
<tr>
<td>Teaching</td>
<td></td>
<td>S2-34, 2nd floor</td>
</tr>
<tr>
<td>Director of Research</td>
<td>Dr Neamat El Gayar</td>
<td>+971 4 5610308 <a href="mailto:n.elgayar@hw.ac.uk">n.elgayar@hw.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S2-55, 2nd floor</td>
</tr>
<tr>
<td>Director of the Institute of</td>
<td>Dr Hani Ragab Hassen</td>
<td>+971 4 4358727 <a href="mailto:H.RagabHassen@hw.ac.uk">H.RagabHassen@hw.ac.uk</a></td>
</tr>
<tr>
<td>Applied Information Security</td>
<td></td>
<td>S2-33, 2nd floor</td>
</tr>
<tr>
<td><strong>Edinburgh Campus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head of School</td>
<td>Professor Beatrice Pelloni</td>
<td><a href="mailto:B.Pelloni@hw.ac.uk">B.Pelloni@hw.ac.uk</a></td>
</tr>
<tr>
<td>Head of Computer Science</td>
<td>Professor Andrew Ireland</td>
<td><a href="mailto:A.Ireland@hw.ac.uk">A.Ireland@hw.ac.uk</a></td>
</tr>
<tr>
<td>Director of Postgraduate Studies</td>
<td>Dr Manuel Maarek</td>
<td><a href="mailto:M.Maarek@hw.ac.uk">M.Maarek@hw.ac.uk</a></td>
</tr>
<tr>
<td>Postgraduate Administrator</td>
<td>Ms Rodi Amiridou</td>
<td><a href="mailto:R.Amiridou@hw.ac.uk">R.Amiridou@hw.ac.uk</a></td>
</tr>
</tbody>
</table>

## 4.3 Academic Staff Contacts

<table>
<thead>
<tr>
<th>Point of Contact</th>
<th>Responsible Staff Name</th>
<th>Direct line/Email/ Office location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate Professor Programme Director: MSc/PGD Information Technology (software systems) &amp; Artificial Intelligence</td>
<td>Dr Mohammad Hamdan</td>
<td>+971 4 4358789 <a href="mailto:M.Hamdan@hw.ac.uk">M.Hamdan@hw.ac.uk</a> S3-14, 3rd floor</td>
</tr>
<tr>
<td>Assistant Professor Programme Director: UG Computer Systems</td>
<td>Ms Smitha Kumar</td>
<td>+971 4 4358786 <a href="mailto:Smitha.Kumar@hw.ac.uk">Smitha.Kumar@hw.ac.uk</a> S2-34, 2nd floor</td>
</tr>
<tr>
<td>Assistant Professor Programme Director: MSc/PGD Software Engineering</td>
<td>Mr Talal Shaikh</td>
<td>+971 4 4358762 <a href="mailto:T.A.G.Shaikh@hw.ac.uk">T.A.G.Shaikh@hw.ac.uk</a> S3-42, 3rd floor</td>
</tr>
<tr>
<td>Associate Professor Programme Director:</td>
<td>Dr Hani Ragab Hassen</td>
<td>+971 4 4358727 <a href="mailto:H.RagabHassen@hw.ac.uk">H.RagabHassen@hw.ac.uk</a></td>
</tr>
</tbody>
</table>

4.4 Support Staff Contacts

<table>
<thead>
<tr>
<th>Point of Contact</th>
<th>Responsible Staff Name</th>
<th>Direct line/Email/Office location</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Lab.</td>
<td>IT Help Desk</td>
<td>+971 4 4358681 to 85 or 87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1st floor, left wing</td>
</tr>
<tr>
<td>PA to the Academic Head</td>
<td>Ms Resmi Nair</td>
<td>971 4 4358668</td>
</tr>
<tr>
<td>of Mathematical &amp;</td>
<td></td>
<td><a href="mailto:N.Resmi@hw.ac.uk">N.Resmi@hw.ac.uk</a></td>
</tr>
<tr>
<td>Computer Sciences</td>
<td></td>
<td>AAO, Ground floor</td>
</tr>
<tr>
<td>Senior Officer – Undergraduate,</td>
<td>Mr. Shiju Balan</td>
<td>+971 4 4358637</td>
</tr>
<tr>
<td>Academic Administration Office</td>
<td></td>
<td><a href="mailto:s.balan@hw.ac.uk">s.balan@hw.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>AAO, Ground floor</td>
</tr>
<tr>
<td>Academic Administrator –</td>
<td>Ms Malisha Louis Pinto</td>
<td>971 4 4358631</td>
</tr>
<tr>
<td>Postgraduate, Academic</td>
<td></td>
<td><a href="mailto:m.pinto@hw.ac.uk">m.pinto@hw.ac.uk</a></td>
</tr>
<tr>
<td>Administration Office</td>
<td></td>
<td>AAO, Ground floor</td>
</tr>
<tr>
<td>Dubai Student Service Centre</td>
<td>Counter Service</td>
<td>+971 4 5610311/12,</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="mailto:DubaiStudentServices@hw.ac.uk">DubaiStudentServices@hw.ac.uk</a></td>
</tr>
</tbody>
</table>

5 PROGRAMME OVERVIEW

Heriot-Watt University reserves the right to update materials from time to time and will ensure that advance notification concerning changes to materials is provided to students on the relevant section of the University website. It is the responsibility of students to check the website, particularly if they are returning to studies after a period during which their studies have been in abeyance.

All students registered for the programme are expected to have read and to be familiar with the contents of this Handbook.

Disclaimer: Every effort has been made to ensure the contents of this handbook are accurate at the time of printing. Unforeseen circumstances may necessitate changes to the procedures, curricula and syllabus described.
PROGRAMME STRUCTURE AND DELIVERY

The University operates a Heriot-Watt Assessment and Progression System (HAPS) which specifies minimum progression requirements. Schools have the option to apply progression requirements above the minimum University requirement, which are approved by the Studies Committees. Students should refer to the programme specific information on progression requirements. This information is detailed later in this handbook.

Graduate Attributes
As a student of Heriot-Watt University, you are part of our global community. You will meet new people, discover new interests, develop your life skills and enhance your employability and career prospects.

The University will provide you with opportunities to develop skills, qualities and academic abilities during your time as a Heriot-Watt student. These are known as the Four Heriot-Watt Graduate Attributes:

- Specialist
- Creative
- Global
- Professional

Further information can be found at: https://www.hw.ac.uk/students/doc/StudentGraduateAttributes.pdf

While very effort is made to ensure that the contents of this handbook are correct at time of printing, changes may occur during the academic year. The most up-to-date version can be found at: https://www.macs.hw.ac.uk/students/home/dubai/
MSc PROGRAMMES
ARTIFICIAL INTELLIGENCE

Programme Director: Dr. Mohammad Hamdan

The aim of this MSc programme is to impart the skills and understanding required to develop intelligent software applications especially those involving evolutionary computation and learning. Students will acquire critical skills and knowledge in Data Mining and Machine Learning, Biologically Inspired Computation, as well as applicable skills concerning applications of Artificial Intelligence to the World Wide Web and (optionally) computer games.

Therefore the aims are to enable the students to:

- Develop detailed knowledge and critical understanding of the main areas of artificial intelligence (including theories, principles and concepts).
- Develop and use a significant range of principal and specialist skills, techniques and practices in the domain.
- Critically review existing practice and develop original and creative solutions to problems within the domain.
- Communicate and work effectively with peers and academic staff in a variety of tasks, demonstrating appropriate levels of autonomy and responsibility.
- Plan and execute a significant project of research, investigation or development in a specialist area within artificial intelligence, demonstrating extensive, detailed and critical understanding of that specialism.

The Programme provides opportunities for learners to achieve the following outcomes:

Understanding, Knowledge and Cognitive Skills

- Critical understanding of the principal theories, principles and concepts relating to the domain of artificial intelligence.
- Extensive, detailed and critical understanding of at least one specialist area within the domain of artificial intelligence.
- Understanding and use of a significant range of the principal skills, techniques and practices in artificial intelligence, and a range of specialised skills, research and investigation techniques, and practices informed by leading-edge research within the domain.
- A broad knowledge of the main areas of artificial intelligence, including terminology, conventions, underpinning theory, techniques and practices.
- Application-based knowledge and skills relating to the broad range of activities within the domain, and specialist knowledge and skills in applications relating to a number of specialist areas within the domain.
- Extensive and detailed knowledge of theories and algorithms relating to artificial intelligence, with specialist applicative skills appropriate to the subdisciplines.
- Extensive and detailed knowledge and understanding of technologies relating to artificial intelligence, and their application, including the ability to critically analyse and review such technologies to support original and creative application development.
- Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of artificial intelligence, including machine learning, web intelligence and biologically inspired models of computation.
- Develop and apply skills in critical analysis, evaluation and synthesis in consideration of the range of theories, concepts and techniques in use within the domain of artificial intelligence, and in the design of projects and experimental models.
- Develop and utilise advanced problem-solving skills and techniques in the development of original and creative solutions to general and specialist issues within the domain.
Scholarship, Enquiry and Research
♦ Research skills and the capability of critical analysis, through review and analysis of current research literature.
♦ An understanding of research ethics, and how to appropriately build on the work of others.

Industrial, Commercial and Professional Practice
♦ Demonstrate critical awareness of current legal, social, ethical and professional issues within the discipline.
♦ Make informed judgements with incomplete or inconsistent data, or where there are no professional or ethical codes or practices for guidance.

Autonomy, Accountability and Working with Others
♦ Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.

Communication, Numeracy and ICT
♦ Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.
♦ Develop and demonstrate critical knowledge and skills in the planning and usage of software tools and numerical techniques to develop, present and communicate information on projects and processes.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 4 mandatory courses and students must choose 4 courses from options (see below). In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.

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<td>F21DL</td>
<td>Data Mining &amp; Machine Learning</td>
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<td>F21BC</td>
<td>Biologically inspired Computation</td>
<td>M</td>
<td>15</td>
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<tr>
<td>F21GA</td>
<td>3D Graphics and Animation</td>
<td>O</td>
<td>15</td>
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<td>F21RO</td>
<td>Intelligent Robotics</td>
<td>O</td>
<td>15</td>
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<td>F21SF</td>
<td>Software Engineering Foundations</td>
<td>O</td>
<td>15</td>
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<td>F29AI</td>
<td>Artificial intelligence &amp; Intelligent Agents</td>
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<td>Semester 2</td>
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<td>F21RP</td>
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<td>F21BD</td>
<td>Big Data Management</td>
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<td>F21AD</td>
<td>Advanced Interaction Design</td>
<td>O</td>
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<td>F21AS</td>
<td>Advanced Software Engineering</td>
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<td>F21MP</td>
<td>MSc Project &amp; Dissertation</td>
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</table>
BUSINESS INFORMATION MANAGEMENT

Programme Director: Dr. Abrar Ullah

The aim of this programme is to impart skills and understanding in information management and IT with a focus on business. It covers the organisation and development of business, information systems and IT. It also addresses management and design issues for them. The programme studies IT but it does not require students to design program or write software.

- Detailed knowledge and critical understanding of the information management and IT techniques needed to address modern business problems.
- Significant range of principal and specialist skills, techniques and practices in applying IT, information systems and data management techniques to business and e-commerce application areas.
- Ability to critically review existing practice and develop original and creative solutions to managing information digitally in application development problems.
- Experience of executing a significant project, investigation or development in the area of applying IT and information management techniques to modern business processes that demonstrates advanced skills and a critical understanding of the technologies required.

The Programme provides opportunities for learners to achieve the following outcomes:

Understanding, Knowledge and Cognitive Skills
- Critical understanding of the main theories, principles and concepts relating to the domain of digital information management including terminology, conventions, standards and methodologies.
- Understanding and use of a significant range of the main skills, techniques and practices in information application development, and a range of specialised skills, research and investigation techniques, and practices informed by current practices within this domain.
- Broad knowledge of the main areas of information system, databases, business management, application-based knowledge and skills relating to the broad range of handling information in business processes, and specialist knowledge and skills in applications relating to a number of specialist areas such as business organisation, e-commerce, information processing and IT project management.

Scholarship, Enquiry and Research
- Extensive, detailed and critical understanding of at least one specialist area within the domain of business information management application development obtained through researching the background to a substantial and challenging project by personal scholarship and conducting a detailed empirical investigation into business information issues at stake.
- Detailed knowledge and understanding of data sources relating to business information management application developments as well the practical skills in how to exploit them in support of original and creative application development.
- Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of digital information management application development including business strategies, digital marketing, e-commerce and IT project management.

Industrial, Commercial and Professional Practice
- Demonstrate critical awareness of current issues within business information management application development, and make informed judgements about them in the light of relevant professional standards.
- Demonstrate an awareness of professional and research issues in the discipline, and an ability to critique current techniques and practice.

Autonomy, Accountability and Working with Others
Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.

- Develop and utilise advanced problem-solving skills and techniques in the shared development of original and creative solutions to general and specialist business information management issues.

- Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.

**Communication, Numeracy and ICT**

- Develop and demonstrate the ability to communicate and present the main issues involved in business information management application development to a literate audience with appropriate use of modern presentational tools and aids.

- Demonstrate appropriate use of methods of calculation and estimation involved in planning digital and information systems solutions and solving information management applications of business processes.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 4 mandatory courses and students must choose 4 courses from options (see below).

In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Mandatory/Optional</th>
<th>Credits</th>
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<td>Semester 1</td>
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<td>Information Systems Methodologies</td>
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<td>15</td>
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<td>F21DF</td>
<td>Databases and Information Systems</td>
<td>M</td>
<td>15</td>
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<td>F21SA</td>
<td>Statistical Modelling and Analysis</td>
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<td>15</td>
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<td>C11CS</td>
<td>Competitive Strategy</td>
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<td>Research Methods and Project Planning</td>
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<td>F21AD</td>
<td>Advanced Interaction Design</td>
<td>O</td>
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<tr>
<td>F21MP</td>
<td>MSc Project &amp; Dissertation</td>
<td>M</td>
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</table>
COMPUTER SYSTEMS MANAGEMENT

Programme Director: Dr. Ryad Soobany

The aim of this MSc programme is to impart the skills and understanding required to enable students to manage complex computer systems as part of the support services of an organisation. This will include selection, installation, maintenance and support of a wide range of technologies, and an understanding of currently recommended methodologies.

In more detail, the programme aims to enable students to:

- Develop detailed knowledge and critical understanding of the main technologies and methodologies pertaining to computer systems management.
- Develop and use a significant range of principal and specialist skills, techniques and practices in the domain, including systems programming and scripting.
- Critically review existing practice and develop original and creative solutions to problems within the domain.
- Communicate and work effectively with peers and academic staff in a variety of tasks, demonstrating appropriate levels of autonomy and responsibility.
- Plan and execute a significant project of research, investigation or development in a specialist area, demonstrating advanced skills and a critical understanding of the technologies required in computer systems management.

Understanding, Knowledge and Cognitive Skills

- Critical understanding of the principal theories, principles and concepts relating to the domain of systems management.
- Extensive, detailed and critical understanding of at least one specialist area within the domain of systems management.
- Understanding and use of a significant range of the principal skills, techniques and practices in systems management, and a range of specialised skills, research and investigation techniques, and practices informed by current practices within the domain.
- A broad knowledge of the main areas of computer systems management, including terminology, conventions, underpinning theory, techniques and practices.
- Application-based knowledge and skills relating to the broad range of activities within the domain, and specialist knowledge and skills in applications relating to a number of specialist areas within the domain.
- Extensive and detailed knowledge of theories and algorithms relating to computer systems management, with specialist applicative skills appropriate to the sub disciplines.
- Extensive and detailed knowledge and understanding of technologies relating to computer systems management, and their application, including the ability to critically analyse and review such technologies to support original and creative application development.
- Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of computer systems management, including systems programming, technologies such as C# and .NET, methodologies such as ITIL.

Scholarship, Enquiry and Research

- Develop and apply skills in critical analysis, evaluation and synthesis in consideration of the range of theories, concepts and techniques in use within the domain of computer systems management, and in the design of projects and experimental models.
- An understanding of research ethics, and how to appropriately build on the work of others.
- Develop and utilise advanced problem-solving skills and techniques in the development of original and creative solutions to general and specialist issues within the domain.
Industrial, Commercial and Professional Practice

- Demonstrate critical awareness of current legal, social, ethical and professional issues within the discipline.
- Make informed judgements with incomplete or inconsistent data, or where there are no professional or ethical codes or practices for guidance.

Autonomy, Accountability and Working with Others

- Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.

Communication, Numeracy and ICT

- Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.
- Develop and demonstrate critical knowledge and skills in the planning and usage of software tools and numerical techniques to develop, present and communicate information on projects and processes.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 4 mandatory courses and students must choose 4 courses from options (see below).

In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Mandatory/Optional</th>
<th>Credits</th>
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<td>Information Systems Methodologies</td>
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<td>F21SF</td>
<td>Software Engineering Foundations</td>
<td>O</td>
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<td>F29DC</td>
<td>Data Communications &amp; Networking</td>
<td>O</td>
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<tr>
<td><strong>Semester 2 (Jan–Apr)</strong></td>
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<td>F21RP</td>
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<td>F21FO</td>
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</table>

Part-time students starting in September or January should discuss their course choice with the Programme Director. All part time students must take F21RP in their final year.
The aim of this MSc programme is to give good graduates with academic knowledge of databases and programming, the academic expertise they need to apply state of the art data analysis and visualization techniques to modern academic, business and government information processing problems. Particular issues of interest include data visualization, data mining, big data management and high performance information processing.

In more detail, the programme aims to impart to students:

- Detailed knowledge and critical understanding of the big data management and visualization techniques needed to analyse modern academic, business and government information sources.
- Significant range of principal and specialist skills, techniques and practices in applying IT, information systems and big data management techniques to large scale, complex and heterogeneous information analysis problems.
- Ability to critically review existing practice and develop original and creative solutions to managing challenging amounts and diversities of digital information for scientific, administrative and competitive commercial applications.
- Experience of executing a significant project, investigation or development in the area of applying IT and big data management techniques to modern information analytic processes that demonstrates advanced skills and a critical understanding of the technologies required.

In common with the other programmes in our postgraduate computer science discipline, the expected learning outcomes are as detailed below:

**Understanding, Knowledge and Cognitive Skills**

- Critical understanding of the main theories, principles and concepts relating to the domain of digital information management including terminology, conventions, standards and methodologies.
- Understanding and use of a significant range of the main skills, techniques and practices in big data processing, and a range of specialised skills, research and investigation techniques, and practices informed by current practices within the data science domain.
- Broad and deep knowledge of the main areas of information systems, databases, machine learning, data visualization, application-based knowledge and skills relating to the broad range of handling information processes, and specialist knowledge and skills in applications relating to a number of specialist areas such as business analytics, data mining, data visualization, data warehousing and high performance data processing.

**Scholarship, Enquiry & Research**

- Extensive, detailed and critical understanding of at least one specialist area within the domain of big data management application development obtained through researching the background to a substantial and challenging data analytics project by personal scholarship, design and development of a detailed information systems solution that incorporates significant proportions of software development or configuration to address the analysis issues at stake.
- Detailed knowledge and understanding of data sources relating to big information management application developments as well the practical skills in how to exploit them in support of original and creative data science application development.
- Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of digital information management application development including data analysis, data mining, parallel data processing, data visualization and data warehousing.

**Autonomy, Accountability & Working with Others**
- Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.
- Develop and utilise advanced problem-solving skills and techniques in the shared development of original and creative solutions to general and specialist data science analysis and management issues.
- Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.

**Industrial, Commercial & Professional Practice**
- Demonstrate critical awareness of current issues within big data management application development, and make informed judgements about them in the light of relevant professional standards.
- Demonstrate an awareness of professional and research issues in the data science discipline, and an ability to critique current techniques and practice.

**Communication, Numeracy and ICT**
- Develop and demonstrate the ability to communicate and present the main issues involved in data science application development to a literate audience with appropriate use of modern presentational tools and aids.
- Demonstrate appropriate use of methods of calculation and estimation involved in planning digital and information systems solutions and solving information management applications of big data processing.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 4 mandatory courses and students must choose 4 courses from options (see below).

In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.

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<td>Data Visualisation and Analytics</td>
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<td>Applied Text Analytics</td>
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<tr>
<td>F21MP</td>
<td>MSc Project &amp; Dissertation</td>
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<td>60</td>
</tr>
</tbody>
</table>

Part-time students starting in September or January should discuss their course choice with the Programme Director. All part time students must take F21RP in their final year.
INFORMATION TECHNOLOGY (SOFTWARE SYSTEMS)

Programme Director: Dr. Mohammad Hamdan

This programme is concerned with the use and application of Information Technology in the specification, design, development and deployment of software systems. Therefore the aims are to enable the students to:

- Develop detailed knowledge and critical understanding of the main areas of software systems (including theories, principles and concepts)
- Develop and use a significant range of principal and specialist skills, techniques and practices in the domain of software systems.
- Critically review existing practice and develop original and creative solutions to problems within the domain.
- Communicate and work effectively with peers and academic staff in a variety of tasks, demonstrating appropriate levels of autonomy and responsibility.
- Plan and execute a significant project of research, investigation or development in a specialist area within software systems, demonstrating extensive, detailed and critical understanding of that specialism.

The Programme provides opportunities for learners to achieve the following outcomes:

**Understanding, Knowledge and Cognitive Skills**

- Critical understanding of the principal theories, principles and concepts relating to the use of Information Technology in the domain of software systems.
- Extensive, detailed and critical understanding of at least one specialist area within the domain of software systems.
- Understanding and use of a significant range of the principal skills, techniques and practices in software systems, and a range of specialised skills, research and investigation techniques, and practices informed by leading-edge research and development domain of software systems, and specialist knowledge and skills in applications relating to a number of specialist areas within the domain.
- A broad knowledge of the main areas of software systems, including terminology, conventions, underpinning theory, techniques and practices.
- Detailed and critical knowledge of at least one area of specialism in software systems, incorporating awareness of current issues and research.
- Application-based knowledge and skills relating to the broad range of activities within the software systems domain, and specialist knowledge and skills in applications relating to a number of specialist areas within the domain.
- Fundamental knowledge and skills in the software engineering life-cycle, incorporating specification, design, development and deployment of software systems, and critical understanding of the range of tools and techniques available to support this process.
- Extensive and detailed knowledge of structured programming concepts and techniques, with advanced and specialist applicative skills in at least one programming language.
- Extensive and detailed knowledge and understanding of communications and network technologies, and their application in software systems, including the ability to critically analyse and review such technologies to support original and creative application development.
- Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of software systems, including databases, artificial intelligence, mobile communications, Digital & Knowledge Economy, computer games programming & internet engineering.
♦ Develop and apply skills in critical analysis, evaluation and synthesis in consideration of the range of theories, concepts and techniques in use within the domain of software systems, and in the design of projects and experimental models.

♦ Develop and utilise advanced problem-solving skills and techniques in the development of original and creative solutions to general and specialist issues within the domain of software systems.

Scholarship, Enquiry and Research
♦ Research skills and the capability of critical analysis, through review and analysis of current research literature.
♦ An understanding of research ethics, and how to appropriately build on the work of others.

Industrial, Commercial and Professional Practice
♦ Demonstrate critical awareness of current legal, social, ethical and professional issues within the discipline.
♦ Make informed judgements with incomplete or inconsistent data, or where there are no professional or ethical codes or practices for guidance.

Autonomy, Accountability and Working with Others
♦ Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.

Communication, Numeracy and ICT
♦ Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.
♦ Develop and demonstrate critical knowledge and skills in the planning and usage of software tools and numerical techniques to develop, present and communicate information on projects and processes.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 3 mandatory courses and students must choose 5 courses from options (see below).

In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.
<table>
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<th>Course Code</th>
<th>Title</th>
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<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21CN</td>
<td>Computer Network Security</td>
<td>O</td>
<td>15</td>
</tr>
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<td>F21GA</td>
<td>3D Graphics and Animation</td>
<td>O</td>
<td>15</td>
</tr>
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<td>F21RO</td>
<td>Intelligent Robotics</td>
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<td>Industrial Programming</td>
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<td>F21SF</td>
<td>Software Engineering Foundations</td>
<td>O</td>
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**Semester 1 (Sept–Dec)**

<table>
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Mandatory/Optional</th>
<th>Credits</th>
</tr>
</thead>
</table>

| F21RP       | Research Methods and Project Planning | M                  | 15      |
| F21AD       | Advanced Interaction Design         | O                  | 15      |
| F21AS       | Advanced Software Engineering       | O                  | 15      |
| F21GP       | Computer Games Programming          | O                  | 15      |
| F21DV       | Data Visualisation and Analytics    | O                  | 15      |
| F21EC       | e-Commerce Technology               | O                  | 15      |

**Semester 2 (Jan–Apr)**

| F21MP       | MSc Project & Dissertation          | M                  | 60      |

**Semester 3 (pending successful completion of 8 taught courses)**

Part-time students starting in September or January should discuss their course choice with the Programme Director. All part-time students must take F21RP in their final year.
INFORMATION TECHNOLOGY (BUSINESS)

Programme Director: Dr. Neamat El Gayar

This programme is concerned with the use and application of Information Technology in supporting business activities, particularly information handling, communications, and entrepreneurship.

Therefore the aims are to enable the students to:

♦ Develop detailed knowledge and critical understanding of the main areas of information technology usage in business (including theories, principles and concepts).
♦ Develop and use a significant range of principal and specialist skills, techniques and practices in the domain of business-related information technology.
♦ Critically review existing practice and develop original and creative solutions to problems within the domain.
♦ Communicate and work effectively with peers and academic staff in a variety of tasks, demonstrating appropriate levels of autonomy and responsibility.
♦ Plan and execute a significant project of research, investigation or development in a specialist area of information technology for business use, demonstrating extensive, detailed and critical understanding of that specialism.

The Programme provides opportunities for learners to achieve the following outcomes:

Understanding, Knowledge and Cognitive Skills
♦ Critical understanding of the principal theories, principles and concepts relating to the use of information technology in the business domain.
♦ Extensive, detailed and critical understanding of at least one specialist area of information technology support for business.
♦ Understanding and use of a significant range of the principal skills, techniques and practices necessary to utilise information technology to support business practice, and a range of specialised skills, research and investigation techniques, and practices informed by leading-edge research and development.
♦ A broad knowledge of the main areas of the use of information technology to support business practices, including terminology, conventions, underpinning theory, techniques and practices.
♦ Detailed and critical knowledge of at least one area of specialism in information technology for business, incorporating awareness of current issues and research.
♦ Application-based knowledge and skills relating to the broad range of activities within the information technology and business domain, and specialist knowledge and skills in applications relating to a number of specialist areas within the domain.
♦ Fundamental knowledge and skills in business and information analysis, incorporating specification, design, development and deployment of information technology to meet business need, and critical understanding of the range of tools and techniques available to support this process.
♦ Extensive and detailed knowledge of structured programming concepts and techniques, with advanced and specialist applicative skills in at least one programming language.
♦ Extensive and detailed knowledge and understanding of communications and network technologies, and their application in business systems, including the ability to critically analyse and review such technologies to support original and creative application development.
♦ Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of business information technology, including databases, information systems, communications, networks, entrepreneurship, enterprise management and organisational management techniques.
- Develop and apply skills in critical analysis, evaluation and synthesis in consideration of the range of theories, concepts and techniques in use within the domain of business information technology, and in the design of projects and experimental models.
- Develop and utilise advanced problem-solving skills and techniques in the development of original and creative solutions to general and specialist issues relating to the use of information technology to support business practices.

Scholarship, Enquiry and Research
- Research skills and the capability of critical analysis, through review and analysis of current research literature.
- An understanding of research ethics and how to appropriately build on the work of others.

Industrial, Commercial and Professional Practice
- Demonstrate critical awareness of current legal, social, ethical and professional issues within the discipline.
- Make informed judgements with incomplete or inconsistent data, or where there are no professional or ethical codes or practices for guidance.

Autonomy, Accountability and Working with Others
- Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.

Communication, Numeracy and ICT
- Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.
- Develop and demonstrate critical knowledge and skills in the planning and usage of software tools and numerical techniques to develop, present and communicate information on projects and processes.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 3 mandatory courses and students must choose 5 courses from options (see below).

In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Mandatory/Optional</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1 (Sept-Dec)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21DF</td>
<td>Databases and Information Systems</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21IF</td>
<td>Information Systems Methodologies</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21SA</td>
<td>Statistical Modelling and Analysis</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21SF</td>
<td>Software Engineering Foundations</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>C11CS</td>
<td>Competitive Strategy</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>C11SP</td>
<td>Strategic Project Management</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td><strong>Semester 2 (Jan-Apr)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21RP</td>
<td>Research Methods and Project Planning</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21BD</td>
<td>Big Data Management</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>C11PA</td>
<td>Project Management</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21EC</td>
<td>e-Commerce Technology</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F29SS</td>
<td>Sociotechnical and Soft Systems</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td><strong>Semester 3 (pending successful completion of 8 taught courses)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21MP</td>
<td>MSc Project &amp; Dissertation</td>
<td>M</td>
<td>60</td>
</tr>
</tbody>
</table>

Part-time students starting in September or January should discuss their course choice with the Programme Director. All part time students must take F21RP in their final year.
NETWORK SECURITY

Programme Director: Dr Hani Ragab Hassen

The aim of this MSc programme is to give good honours graduates with an IT background the understanding and skills to elicit network security requirements, analyse security threats, formulate security policies, devise security regimes of mechanisms and services, deploy network security solutions and validate their effectiveness. It also aims to impart detailed understanding and knowledge of contemporary issues in network security research areas.

The aims of the programme are:

- Detailed knowledge and critical understanding of the main areas of computer network security including theories, principles and concepts.
- Significant range of principal and specialist skills, techniques and practices in the computer network security domain.
- Specialist knowledge of security techniques as they apply to developing distributed and networked applications.
- Ability to critically review existing practice and develop original and creative solutions to problems requiring computer network security solutions.
- Ability to communicate and work effectively with peers and academic staff in a variety of tasks, demonstrating appropriate levels of autonomy and responsibility.
- Ability to plan and execute a significant project of research, investigation or development in a specialist area within computer network security, demonstrating extensive, detailed and critical understanding of that specialism.

The Programme provides opportunities for learners to achieve the following outcomes:

**Subject Mastery:**

*Understanding, Knowledge and Cognitive Skills*
- Critical understanding of the main theories, principles and concepts relating to the domain of computer network security including conventions, methodologies, standards and terminology.
- Understanding and use of a significant range of the main practices, skills and techniques in network security software engineering, and a range of specialised skills, research and investigation techniques, and practices in designing and validating computer network security solutions informed by current best practice.
- Broad and deep knowledge of the computer network security areas of access control, cryptography, means of authentication, network security tools, security policy management, as well as application-based knowledge and skills relating to known security exploits, malware and their detection and prevention, and specialist knowledge and skills in applications relating to a number of specialist areas such as biometrics, firewall management, intrusion detection, penetration testing, public key certificates and user education in good security practice.

*Scholarship, Enquiry and Research*
- Extensive, detailed and critical understanding of at least one specialist area within the domain of Computer Network Security application development obtained through researching the background to a substantial and challenging network security engineering project that addresses a real or simulated sets of threats by personal scholarship, design, development and testing of a detailed means of prevention.
- Detailed knowledge and understanding of network security software engineering techniques relating to authentication, authorisation and auditing as well as the practical skills in how to exploit them in support of original and creative network security application development.
Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of network security application development including cryptography, digital forensic techniques, malware analysis, network defence technologies and penetration testing.

**Personal Abilities:**
*Industrial, Commercial and Professional Practice*
- Demonstrate critical awareness of current issues within network security application development, and make informed judgements about them in the light of relevant professional standards.
- Demonstrate an awareness of professional and research issues in the network security discipline, and an ability to critique current techniques and practice.

*Autonomy, Accountability and Working with Others*
- Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.
- Develop and utilise advanced problem-solving skills and techniques in the shared development of original and creative solutions to general and specialist network security engineering issues.
- Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.

*Communication, Numeracy and ICT*
- Develop and demonstrate the ability to communicate and present the main issues involved in network security application development to a literate audience with appropriate use of modern presentational tools and aids.
- Demonstrate appropriate use of methods of calculation and estimation involved in planning network security engineering solutions and deploying and validating such solutions.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 4 mandatory courses and students must choose 4 courses from options (see below).

In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Mandatory / Optional</th>
<th>Credits</th>
</tr>
</thead>
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<tr>
<td><strong>Semester 1 (Sept–Dec)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21CN</td>
<td>Computer Network Security</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21SC</td>
<td>Industrial Programming</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21DF</td>
<td>Databases and Information Systems</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21DL</td>
<td>Data Mining and Machine Learning</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21RS</td>
<td>Rigorous Methods for Software Engineering</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21SF</td>
<td>Software Engineering Foundations</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F29DC</td>
<td>Data Communications and Networking</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>B31TF</td>
<td>Sensors, Actuators and IoT</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td><strong>Semester 2 (Jan–Apr)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21AN</td>
<td>Advanced Network Security</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21RP</td>
<td>Research Methods &amp; Project Planning</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21AS</td>
<td>Advanced Software Engineering</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21BD</td>
<td>Big Data Management</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21FO</td>
<td>Digital Forensics</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>C11PA</td>
<td>Project Management</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td><strong>Semester 3 (pending successful completion of 8 taught courses)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21MP</td>
<td>MSC Project &amp; Dissertation</td>
<td>M</td>
<td>60</td>
</tr>
</tbody>
</table>

Part-time students starting in September or January should discuss their course choice with the Programme Director. All part time students must take F21RP in their final year.
SOFTWARE ENGINEERING

Programme Director: Talal Shaikh

This programme is designed to impart the understanding and skills to engineer software at an advanced level to professional standards with an emphasis on developing dependable systems. To meet society’s growing demand for software applications suited to supporting critical services. It teaches computing graduates how to use state-of-the-art techniques and methodologies to develop reliable, safe, secure and trustworthy software.

Therefore the aims are to enable the students to:

- Develop detailed knowledge and critical understanding of the main areas of software engineering for dependable systems development (including theories, principles and concepts).
- Develop and use a significant range of principal and specialist skills, techniques and practices in the domain.
- Critically review existing practice and develop original and creative solutions to problems within the domain.
- Communicate and work effectively with peers and academic staff in a variety of tasks, demonstrating appropriate levels of autonomy and responsibility.
- Plan and execute a significant project of research, investigation or development in a specialist area within mobile software systems, demonstrating extensive, detailed and critical understanding of that specialism.

The Programme provides opportunities for learners to achieve the following outcomes:

Subject Mastery:
Understanding, Knowledge and Cognitive Skills

- Critical understanding of the principal theories, principles and concepts relating to the development of reliable, safe, secure and trustworthy software.
- Extensive, detailed and critical understanding of at least one specialist area within the domain of software engineering.
- Understanding and use of a significant range of the principal skills, techniques and practices in engineering dependable software systems, and a range of specialised skills, research and investigation techniques, and practices informed by leading-edge research within the domain.
- A broad knowledge of the main areas of software engineering, including terminology, conventions, underpinning theory, techniques and practices.
- Application-based knowledge and skills relating to the broad range of activities within the domain, and specialist knowledge and skills in applications relating to a number of specialist areas within the domain.
- Extensive and detailed knowledge of high integrity programming concepts and techniques, with advanced and specialist applicative skills in at least one programming language.
- Extensive and detailed knowledge and understanding of software engineering methodologies, and their application including the ability to critically analyse and review such methodologies to support original and creative application development.
- Specialist and critical knowledge, understanding and skills in a number of mainstream and specialist areas within the domain of software engineering, including mobile networking, automated software engineering and information systems methodologies.
- Develop and apply skills in critical analysis, evaluation and synthesis in consideration of the range of theories, concepts and techniques in use within the domain of mobile software systems, and in the design of projects and experimental models.
- Develop and utilise advanced problem-solving skills and techniques in the development of original and creative solutions to general and specialist issues within the domain.
Scholarship, Enquiry and Research

- Research skills, and the capability of critical analysis, through review and analysis of current research literature.
- An understanding of research ethics, and how to appropriately build on the work of others.

Personal Abilities:
Industrial, Commercial and Professional Practice

- Demonstrate critical awareness of current legal, social, ethical and professional issues within the discipline.
- Make informed judgements with incomplete or inconsistent data, or where there are no professional or ethical codes or practices for guidance.

Autonomy, Accountability and Working with Others

- Work autonomously and within teams, as appropriate, demonstrating a capability for both taking and critically reflecting on roles and responsibilities.

Communication, Numeracy and ICT

- Develop and demonstrate skills and techniques in communication with peers and academic/industrial staff, using a range of appropriate methods to suit different levels of knowledge and expertise within the audience.
- Develop and demonstrate critical knowledge and skills in the planning and usage of software tools and numerical techniques to develop, present and communicate information on projects and processes.

Students take 8 courses, 4 each in semesters 1 & 2, including a taught Research Methods and Project Planning course in semester 2. There are 4 mandatory courses and students must choose 4 courses from options (see below).

In semester 3 students, who have met the required criteria, will undertake their Masters dissertation.
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Mandatory/Optional</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>Semester 1 (Sept– Dec)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21RS</td>
<td>Rigorous Methods for Software Engineering</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21SC</td>
<td>Industrial Programming</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21BC</td>
<td>Biologically Inspired Computation</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21CN</td>
<td>Computer Network Security</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21GA</td>
<td>3D Graphics and Animation</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21DL</td>
<td>Data Mining and Machine Learning</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td><strong>Semester 2 (Jan– Apr)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21AS</td>
<td>Advanced Software Engineering</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21RP</td>
<td>Research Methods &amp; Project Planning</td>
<td>M</td>
<td>15</td>
</tr>
<tr>
<td>F21BD</td>
<td>Big Data Management</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21AD</td>
<td>Advanced Interaction Design</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21GP</td>
<td>Computer Games Programming</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>C11PA</td>
<td>Project Management</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td>F21SM*</td>
<td>Software Engineering Master Class</td>
<td>O</td>
<td>15</td>
</tr>
<tr>
<td><strong>Semester 3 (pending successful completion of 8 taught courses)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F21MP</td>
<td>MSc Project &amp; Dissertation</td>
<td>M</td>
<td>60</td>
</tr>
</tbody>
</table>

Part-time students starting in September or January should discuss their course choice with the Programme Director. All part time students must take F21RP in their final year.

* - Special permission is required to take F21SM Software Engineering Master Class.
OVERVIEW AND STRUCTURE

MSc CALENDAR 2019-2020

<table>
<thead>
<tr>
<th>Activity</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSc Assessment Period – semester 1</td>
<td>9-20 December 2019</td>
</tr>
<tr>
<td>MSc Assessment Period – semester 2</td>
<td>27 April – 22 May 2020</td>
</tr>
<tr>
<td>Semester 3 Dissertation (15 weeks)</td>
<td>5 May- 20 August 2020</td>
</tr>
<tr>
<td>MSc Board of Examiners Meeting – Progression (after which progression results are released)</td>
<td>May/ June 2020 (TBC)</td>
</tr>
<tr>
<td>MSc Resit Exams</td>
<td>6-14 August 2020</td>
</tr>
<tr>
<td>MSc Dissertation Submission</td>
<td>Thursday 20 August 2019</td>
</tr>
<tr>
<td>MSc Board of Examiners Meeting – Award (after which award results are released)</td>
<td>September 2020 (TBC)</td>
</tr>
<tr>
<td>Graduation</td>
<td>November 2020 (TBC)</td>
</tr>
</tbody>
</table>

MACS Student Website
Lots of information regarding MACS programmes and courses can be found at: https://www.macs.hw.ac.uk/students/

Student Portal
You can access the University Student Portal at: http://portal.hw.ac.uk/

Virtual Learning Environment (VLE)
Most courses have on-line material available at the University’s Virtual Learning Environment (VISION) which can be found at: https://vision.hw.ac.uk/

Student Self Service
This is where you can update your address and where you will get your on-line results - https://myhwu.hw.ac.uk/.

Course Summaries
Please refer to https://www.macs.hw.ac.uk/students/cs/courses/

Course Choices
Students select courses at the pre-enrolment session with guidance from Academic staff, but may change their selection in the first two weeks of the semester that the relevant course runs.
Teaching and Learning Approaches and Expectations

The course is taught primarily in a traditional lecture-based approach, with a variety of supporting laboratory-based practicals. Students may be expected to complete coursework in groups, teams and pairs, as well as individually, and courses offer a range of types of coursework for assessment, from discursive essay-style assignments to code design and generation. In some courses, team teaching approaches are adopted to provide additional support and variety, and electronic support, in the form of email lists, newsgroups and bulletin boards may be used to disseminate information and support student communication and practice.

As it is a postgraduate programme students must develop advanced skills that go beyond that required for undergraduate programmes. Students are expected to be able to critically evaluate the techniques and methodologies they are taught, not simply apply the skills. The examinations will test abilities not just to recall and apply techniques, but to provide, for example, a discussion of their advantages in particular unseen cases. Students also are expected to develop a level of professional awareness, and skills in team working and communication.

Heriot-Watt University does not tolerate plagiarism on any level. Work presented as your own must be your own and not use any words or code from others. More information is available in the Postgraduate handbook. If you copy coursework, or if you cut-and-paste material from the Web and pass it off as your own words, then you will be sent to the University Disciplinary Committee. In some cases students may be compulsorily withdrawn from the University as a result.

Communication

Please check your University email regularly – we will use this method of communication to send out important information to you.

Please make sure Student Services has your current home and semester address at all times.

Course Assessment

Courses on the programme may be assessed by coursework only, or by a mixture of coursework and examination.

In some taught courses there is an exam. This is held at the end of the relevant Semester (see Calendar on page 2). Examination marks are weighted with any coursework mark (eg 80%-20%) to provide a final mark. There is a nominal pass mark on a course basis. However, assessment marks are averaged for progression purposes (see below).

Past exam papers can be found at: https://www.macs.hw.ac.uk/students/cs/.

Past exam papers are only accessible on-campus or if you use the VPN: https://www.hw.ac.uk/services/is/it-essentials/virtual-private-network-vpn.htm

Examination timetables can be found at: https://www.hw.ac.uk/students/studies/examinations/timetables.htm

For courses assessed by coursework only (including the project), coursework-based summative assessment within and at the end of the course will provide a mark and grade.
Grades & Assessments
Grades for each course are awarded as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality</th>
<th>Overall mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>Overall mark of approximately 70% or more</td>
</tr>
<tr>
<td>B</td>
<td>Very Good</td>
<td>Overall mark of approximately 60% to 69%</td>
</tr>
<tr>
<td>C</td>
<td>Good</td>
<td>Overall mark of approximately 50% to 59%</td>
</tr>
<tr>
<td>D</td>
<td>Satisfactory</td>
<td>Overall mark of approximately 40% to 49%</td>
</tr>
<tr>
<td>E</td>
<td>Adequate</td>
<td>Minimum required for the award of credits</td>
</tr>
<tr>
<td>F</td>
<td>Inadequate</td>
<td>Fail</td>
</tr>
</tbody>
</table>

Programme & Examination Requirements

Attendance Requirements
In order to achieve course and programme learning outcomes, students are expected to attend all scheduled course learning sessions (e.g. timetabled lectures, tutorials, lab sessions, etc). Should you have to miss a timetabled session due to ill health or other legitimate reasons, you should submit a self-certification or medical certification or an application for consideration of Mitigating Circumstances [https://www.hw.ac.uk/students/studies/examinations/mitigating-circumstances.htm](https://www.hw.ac.uk/students/studies/examinations/mitigating-circumstances.htm).

Students who fail to satisfy course attendance requirements may, after due warning, be disallowed from presenting themselves for examination in the course (see [https://www.hw.ac.uk/students/doc/withdrawalprocedures.pdf](https://www.hw.ac.uk/students/doc/withdrawalprocedures.pdf)).

Coursework must be handed in by the stipulated dates, and students are required to see their personal tutors at agreed times. Students who fail to submit compulsory coursework may also be disallowed from presenting themselves for examination in the relevant courses.

All lectures and tutorials are compulsory and registers of attendance may be taken.

If you are absent from class due to illness for four days or less, you should complete a self-certification form, obtainable from the Student Services and return it to the Student Services within a week of your return. If you are absent for more than four days, you must supply a medical certificate to the Student Services within a week of your return.

Examinations
It is the student’s responsibility to check all relevant examination timetables (including resits) on the Registry web page [https://www.hw.ac.uk/students/studies/examinations.htm](https://www.hw.ac.uk/students/studies/examinations.htm).

The semester 1 exam timetable will be available on 31 October. The semester 2 exam timetable will be available on 28 February.

Should you be required to be re-assessed in any examinations, you must be available to take them. **The re-assessments take place in early August.**

All examinations must be taken at the Dubai Campus.

Calculators, Dictionaries & Electronic Devices
Where a calculator is required for the completion of an examination, a student may use any basic scientific calculator, except the following: graphics calculator, programmable calculator and a calculator which features text storage or retrieval facilities.
Students are not allowed to have mobile phones or other communication devices on or about their person during examinations. Phones may be left at the front of the examination room but must be switched off.

No translation dictionaries are permitted in any of the University’s examinations. The only exception to the policy is in the case of individual students who had been assessed by the University’s Disability Service as requiring access to a translation dictionary.

**Unauthorised Material**

You must not have any unauthorised pre-printed materials or electronic devices or in the examination room. Cheating in an examination is treated very seriously by the University. If you do have any material relevant to the exam which you have brought in by mistake, you must hand it over to an invigilator before the start of the examination. Invigilators will carry out checks on authorised materials and calculators.

**Submission of Coursework Policy**

The University recognises that, on occasion, students may be unable to submit coursework and dissertations by the submission date. As such, the University has agreed a new policy from 2018/19 which states:

- No individual extensions are permitted under any circumstances (unless course coordinators decide to give an extension to an entire class);
- Standard 30% deduction from the mark awarded (maximum of five working days);
- Alternative options if students cannot submit coursework or their dissertation on time

In the case where you submit coursework up to five working days late and you have valid mitigating circumstances, the mitigating circumstances policy will apply and appropriate mitigation will be applied.

Formative feedback will be provided on all coursework submitted up to five working days late.

Any coursework submitted after five calendar days of the set submission date shall be automatically awarded a no grade with no formative feedback provided.

There will be no extensions granted to coursework (this includes undergraduate and postgraduate taught dissertations).

A link to the policy can be found here [https://www.hw.ac.uk/services/docs/CourseworkPolicyFinal.pdf](https://www.hw.ac.uk/services/docs/CourseworkPolicyFinal.pdf).

**Feedback**

Feedback is a two-way process. Feedback is provided to students in a variety of ways in order to help you to reflect on and to evaluate your progress and to assist you to take steps to improve before the next relevant assessment. For most courses, students can expect feedback on assessed coursework within three teaching weeks of the coursework due date.

Feedback is sought from students via Student-Staff Liaison Committees and various surveys so that the School can continue to enhance the student learning experience. Your feedback is valued by the School, so please be sure to provide feedback whenever it is sought.

**Assessments Results**

Details on how and when you will receive your Assessment Results can be found at: [https://www.hw.ac.uk/students/studies/examinations/results.htm](https://www.hw.ac.uk/students/studies/examinations/results.htm)

The official mechanism for receiving all your assessment results is on-line at Student Self Service [https://myhwu.hw.ac.uk/](https://myhwu.hw.ac.uk/).
You will officially receive the provisional results of your semester 1 assessments in mid-January. You will receive the final results of your semester 1 & 2 assessments in mid-June. You will receive your dissertation result and your award recommendation in mid-September. You will receive an email to your University email account to inform you when you can view your official results on-line at https://myhwu.hw.ac.uk/.

You will receive a final assessment results letter with your award recommendations in mid-September. This letter will be sent to the Dubai Campus for you to pick up.

On-line results show marks and grades while your official Assessments Results Letter will only show grades.

**Progression to Dissertation**

To pass your MSc you must obtain a credit weighted average of 50% or more over all 8 taught courses at grades A to D, a mark on F21RP Research Methods of 45% or above, and a grade C or better in your MSc project. However, students must also fulfil a progression requirement after doing the 8 taught courses before they are allowed to attempt to complete their MSc project. It requires them to obtain the credit weighted average of 50% or more over all 8 taught courses at grades A to D and at least 45% on F21RP beforehand.

MSc students, who fail to meet the progression requirement, may be able to meet it by doing resits as detailed below. If improved marks obtained in resits then enable the student to meet it, the student may continue at that point with their MSc project.

The Masters dissertation counts as 600 effort hours (4 courses), in Semester 3. Detailed guidelines on the conduct of the project and the production of the dissertation are provided in Appendix B, MSc Project Guidance.

The final dissertation is submitted in mid-August (see dates). Students may choose to demo their work to their supervisor or second reader.

Students may graduate with a Postgraduate Diploma without doing the main project. In this case, the requirement is to get a credit weighted average of at least 40% over all 8 taught courses (including Research Methods), with at least grade E passes in all of them.

Further details on the MSc Dissertation is given in Appendix B

**Re-Assessment Opportunities**

Students will be able to be re-assessed in a **maximum of 3 courses**. Where this is by examination it will be at the next opportunity which will be in the resit diet in August, subject to payment of the appropriate fees to the University, and may be required to do so to obtain the necessary credits for completion of their programme or for progression.

A student who has been awarded a Grade E or a Grade F in a course must be re-assessed in that course (up to a maximum of 3 courses). A student who has been awarded a Grade D in a course may be re-assessed in that course in order to proceed to, or be eligible to receive the award of, Masters.

**There is no non-discretionary re-assessment opportunity for the Dissertation.**
Mitigating Circumstances
If you experience any Mitigating circumstances which affect your ability to complete your assessments you must notify us as soon as possible.

You should read the University’s Policy on Mitigating Circumstances in Relation to Assessment and then complete the application form at: https://www.hw.ac.uk/students/studies/examinations/mitigating-circumstances.htm. This form along with any relevant evidence (eg medical certificates) should be submitted to the Academic Administration Office.

Evidence submitted after your results have been published cannot be taken into account.

Dealing with Problems
If you or your class has any concerns about the course please talk to the lecturer concerned or to the Postgraduate Director. They will be very willing to help. Please speak to your lecturer after the lecture, or email the Postgraduate Director to make an appointment.

If you have personal problems that are getting in the way of your study please contact your mentor, or the Postgraduate Director.

Award Criteria

<table>
<thead>
<tr>
<th>No. of Course Passes (Credits)</th>
<th>Overall Mark/Grade</th>
<th>Basis of Overall Mark/Grade</th>
<th>Other Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>MASTER DISTINCTION</td>
<td>9 (180)</td>
<td>&gt;= 70%/ A</td>
<td>Credit weighted average &gt;=70% over 8 courses plus a dissertation/projects at grade A</td>
</tr>
<tr>
<td>MASTER</td>
<td>9 (180)</td>
<td>&gt;= 50%/ C</td>
<td>Credit weighted average &gt;=50% over 8 courses at grades A-D plus a dissertation/projects at minimum grade C</td>
</tr>
<tr>
<td>DIPLOMA DISTINCTION</td>
<td>9 (120)</td>
<td>&gt;= 70%/ A</td>
<td>Credit weighted average &gt;=70% over 8 courses at grades A-C</td>
</tr>
<tr>
<td>DIPLOMA</td>
<td>8 (120)</td>
<td>&gt;= 40%/ D</td>
<td>Credit weighted average &gt;=40% over 8 courses at grades A-E</td>
</tr>
<tr>
<td>CERTIFICATE</td>
<td>4 (60)</td>
<td>&gt;= 40%/ D</td>
<td>Credit weighted average &gt;=40% over 4 courses at grades A-E</td>
</tr>
</tbody>
</table>

Full details of award and progression rules are in Appendix C.
Prizes
The following prizes are available to each MSc cohort:
- Dr Alison Cawsey Memorial Prize for the most deserving MSc student (£200) – Edinburgh & Dubai
- School Prize for best MSc student (£200) - Edinburgh & Dubai
- School Prize for best MSc Dissertation (£200) - Edinburgh & Dubai

Graduation
When you have completed your degree your award is conferred at a graduation ceremony. Details on graduation, including how to apply, deadlines for applying and the cost, can be found at: https://www.hw.ac.uk/students/studies/graduation.htm.

Thinking of Leaving
Many students think about leaving university at some stage during their studies. If anything is bothering you or you are thinking about leaving, please speak to a member of staff to explore and understand what you can do.

There may be other options such as additional help (perhaps advice on how to improve your academic skills), a temporary suspension of studies or transferring to another programme.

Further information is available at: https://www.hw.ac.uk/students/studies/leaving.htm

Complaints and Appeals
Our aim at Heriot-Watt is to ensure that your experience while studying with us is of the highest quality. However, we recognise that during your time at the University there may be circumstances that occur where you feel you need to make a complaint or to appeal a decision.

Further information is available at: https://www.hw.ac.uk/students/studies/complaints-appeals.htm
APPENDIX A

Course Descriptors

These can be found at:

https://www.macs.hw.ac.uk/students/cs/courses/

The University reserves the right to withdraw or modify the content of any course
APPENDIX B

MSc Project Guidance
MSc Project Guidance

The following section gives information about the conduct of MSc projects and the preparation and submission of MSc dissertations. Further information and advice is provided in the F21RP Research Methods and Project Planning course.

MSc Project Conduct and Milestones
An MSc project is a substantial and extensive investigation of a challenging topic in the subject area of an MSc. It is intended to give an MSc student a major opportunity to exercise their new understanding and advanced skills acquired on their programme by applying them to a significant and advanced practical problem. It is primarily assessed by means of a major piece of writing that describes the full scope of their MSc project from its aims and objectives through its requirements analysis, design of software or experiments to implementation, summative evaluation and conclusions. Students are supervised by a qualified academic with expert knowledge in the subject area while they are doing the MSc project.

Preparations for the MSc project begin in the second semester on the mandatory course F21RP Research Methods and Project Planning. That course develops student skills in critical thinking, research planning, academic writing and experimental design appropriate to their MSc project. It also explains appropriate approaches to planning the project. Students are made aware of legal, social, ethical and professional issues at stake and how to address them. Students are expected to meet with their supervisors throughout semester 2 for guidance and assistance in researching the background to their project. This research phase issues in the student writing a research background report which is part of the assessed coursework for the F21RP course.

The research background report has 3 main elements:

1. Literature review
2. Requirements analysis of software or experiments to be attempted
3. Project plan

The first two elements can also be used as part of the MSc dissertation after suitable revision to reflect any changes in the project’s direction and details.

Immediately after the MSc exams at the end of semester 2, students begin work on their MSc project and continue full time on the project for 15 weeks until near the end of August. At that point they submit an MSc dissertation, as described below.

The milestones of an MSc project are as follows:

1. project selection period at start of semester 2
2. project allocation in following week
3. research background to MSc topic completed by end of semester 2
4. begin full-time project immediately after end of semester 2 exams
5. project dissertation submission towards end of August

See the earlier MSc calendar for the exact dates.

MSc Project Selection
At the start of the second semester MSc students will be invited to select their MSc project. Students can either select projects from a list of projects that will be made available on the web or they can propose their own project. Lectures on the course F21RP Research Methods & Project Planning will give guidance on this process.

Projects listed on the web will include the proposed project title, the proposer, a description of its content, some references, an optional hyperlink to further details and the kinds of knowledge and skills that are
required to attempt it. The project proposer will be an academic in the department and that person will normally supervise the project. However, in a few cases another supervisor may be arranged instead. Project selection is done online by filling a form specifying 1st, 2nd and 3rd choices. In cases where the project title is very generic, the actual project attempted and its final title will be determined by negotiation between the student and their supervisor. Students are advised to contact the project proposer and discuss what the project involves and whether they are suitable before making a project selection. After the selection deadline has passed, students will be informed as to who has been allocated which project. This allocation is done so as to try to ensure that every student has as close to their 1st choice as possible.

Students may also propose their own project. If they do so, they should write on an A4 page, the project’s title, a description of its content, their name and programme being studied, and detail any special software or equipment requirements. The level of detail required should be similar to the level of detail given in published project proposals by academics. The student should then submit the MSc project proposal to their programme director. Their programme director will be responsible for vetting the project for suitability and then if it qualifies or qualifies after being suitably amended, their programme director will also help them find them a supervisor.

Either way the student will fill in the MSc project form once it has been agreed and get their programme director and supervisor to sign it. It should then be submitted to Peter King who manages project allocation. Problems about project allocation can be resolved through Peter King, who is in charge of project allocations, and their programme director.

**MSc Project Supervision**

Once an MSc student has been given a supervisor, the student should seek an early meeting with that supervisor. Students are expected to meet with their supervisor once a week until the end of their MSc project. It is the student’s responsibility to make that first meeting, and it is the student’s responsibility to ensure that they attend every weekly meeting throughout the entire project period. Failing to meet your supervisor regularly every week is a fairly good way of setting yourself up to fail your MSc project.

Arranging to meet a supervisor can be done either in person by going to that academic’s room in the department during office hours or by asking for an appointment by e-mail.

Even the cleverest MSc student is unlikely to be able to anticipate all the guidance that can be obtained from their supervisor. Only by attending supervisions is a student going to be well placed to get a good mark on their MSc project. MSc projects require research, practical work and writing. Students can expect extensive help with all these aspects from their supervisor.

**MSc Dissertation - Format and Length**

As a general rule, the body of the dissertation should be between 15,000-20,000 words - this will normally correspond to about 45-60 pages if you include some diagrams. Dissertations which are significantly outside this range may be penalised for being too short or too long. We don't have a prescriptive style/format, but you should choose a font that is easy to read (normally 10 or 12 point) and are encouraged to use one-and-a-half line spacing. You should include appendices for additional material not central to the report (e.g., questionnaires, screenshots) and these will be in addition to the 45-60 pages for the main body.

**MSc Dissertation - Content and Structure**

Your project will be assessed primarily from the dissertation and it is therefore essential that it is a full account of your work and clearly presented. The detailed structure will depend on the type of project, and you should obtain advice from your supervisor. Your supervisor can also be expected to comment on outlines and drafts. When writing your dissertation, make sure to pitch it at the right level. You should not assume that your reader is an expert in the specialist topic that you are reporting, but should assume they have a good knowledge of the general discipline (CS/IT). If you think a good fellow student would understand it, then that is about right.
All dissertations will normally have the following elements:

- Title Page
- Declaration that the dissertation is your own work (see discussion in section on submission)
- Abstract: A summary of the dissertation highlighting major points and describing the dissertation's scope and conclusions.
- Acknowledgements: Anyone you wish to thank.
- Table of Contents: Detailed breakdown with chapter headings, section headings, and maybe subsection headings, each with page numbers.
- Table of Figures: Location, number and legend of all figures in document (optional)
- Chapters of Content (see later)
- References (see later)
- Bibliography (optional - recommended reading such as sources that you have used but not cited)
- Appendices (optional)

Chapter 1 will normally start with a short introduction to the problem you are addressing and your aims and objectives, give a short review of the context, and describe what follows in the main body of the report.

Chapter 2 will normally include a critical review of relevant literature, so the reader understands what you are building on. You may also describe techniques, guidelines and even existing products if relevant to what you will be presenting later. It is important that this review is written in your own words throughout, reads as a coherent and connected piece of writing, shows the relevance of the material presented to the problem being addressed, and provides some critique/analysis of the material and its applicability to the problem. In essence it is your analysis and understanding that we are interested in, how you build on existing work, understand its limitations, select from available methods/tools, and present that coherently.

It is important to select your references carefully in your review. It is not sufficient to find 15 web sites which seem to have something relevant to say. Sources should be authoritative, accurate, and preferably should still be around in 5 years time. Academic papers and books usually meet these criteria, but also some web site sources are acceptable - sometimes a web site is indeed the most appropriate and authoritative source on a subject. See later for how to cite your references.

The structure of the middle section of your dissertation will vary according to the type of project. Many possible structures are possible but two typical structures are discussed below:

A. Software Engineering Project.
   The goal is to develop some software to solve some problem. The chapters should cover requirements, design, prototyping and redesign, implementation, evaluation, conclusion.

   This structure is appropriate where you have a customer (external or supervisor) who wants some software for a real (or imagined!) problem. A successful project is one where you elicit the customer's needs, develop a reliable and functional solution, and test/evaluate the software to demonstrate that it does indeed meet the customer's needs. It should also of course be technically non-trivial. A simple set of web pages might satisfy some customers but would not result in you getting an MSc.

B. Research Project:
   The goal is to advance understanding by carrying out an investigation which may include prototyping a system. The chapters will present the problem (sometimes as a hypothesis), review existing work (as above), describe the research undertaken (including design of any experiments), present the results of any experiments, present any conclusions, relating these to past work and suggesting further work.
This structure is appropriate for open-ended investigations inspired by either a novel idea (like "The use of multimedia can negatively affect the experience of learning") or a plausible principle or hypothesis (such as "Distribution of a database provides information access speedup"). The aim is to investigate something about which not enough is already known or understood, and hence make a modest contribution to knowledge. Where a program is developed, it is not an end in itself. Rather it is an instrument for experimentation and discovery. The interest, significance and quality of the results are the primary criteria of success (bearing in mind that negative results of a well-conducted investigation are often as valuable as positive.)

Many variants of these structures are possible. For example, some projects will centre on the evaluation of an existing software system, and the structure will reflect that. Some projects may involve surveys of user or organisation opinion, and it may be the design of these surveys that forms a central element. Don’t feel constrained to structure your document in a particular way, but ensure that the structure is discussed with your supervisor.

Note that in both styles of dissertation the final chapter will normally present conclusions and discuss further work. It should be clear just what has been achieved against the original objectives/problem description set out in chapter 1. It is important to make clear what has been learned and achieved and what further work could be undertaken by you or others to further the objectives of the project.

**MSc Project Evaluation**

It is not enough to achieve something in doing your MSc project by way of software development or by conducting some experiment. You also need to demonstrate the worth of what you have achieved by some kind of independent standard other than your own satisfaction with what you have done. With a software development project you can do this by conducting an evaluation with the help of some third parties.

Evaluation is different from testing your software. The aim of testing is to verify that your software does what it is designed to do. The aim of evaluation is to validate that your software fulfils the project’s requirements. A minimum evaluation might be a checklist comparison of what the original requirements were and what you succeeded in implementing. However, this is usually insufficiently convincing as it is too simple to subvert. You could easily rewrite the requirements to fit with whatever software you succeeded in producing and give yourself a perfect evaluation score.

More convincing is to conduct an evaluation where you exercise your software in accordance with the project aims and get independent persons to give judgements about the worth of what you have done. Since most software is interactive, a typical evaluation might consist of giving users a series of representative tasks to perform using the software and assessing how well they succeeded in doing them. You could record whether they succeeded or needed help to succeed or gave up or failed and score how well they succeeded in doing (efficacy, accuracy, time, effort etc.) The testers can contribute to that assessment by filling in a questionnaire addressing a range of usability and functionality aspects of the system. Their judgements would help establish the independence of the evaluation. The questionnaire could ask users to rate aspects of the system along various quality dimensions and you could provide average scores of these ratings. The questionnaire could also ask users to give free text comments about what worked and what needs improvement. The number and choice of testers needn’t be so numerous and balanced that they would eliminate all biases to a scientific level of respectability. However, between 5 and 10 testers of varied character should be enough to be reasonably indicative of how well your software does what it is supposed to and what its shortcomings are.

Your evaluation should be written up and presented in your dissertation after you describe what you have achieved. Usually you would present this in a special chapter by itself. No software is perfect so the evaluation is likely to reveal shortcomings. You shouldn’t try to hide or disguise them. You are unlikely to convince your dissertation markers that your software was one big success story if your evaluation just presents a bland picture of a successful outcome. You should turn around the shortcomings by being
honest and realistic about them and even take the opportunity to say how they might be ameliorated. That self-critique is often the most interesting part of a dissertation. It is also a hallmark of a good project write-up that the author is capable of recognising the project's limitations and can clearly see what needs improving.

**MSc Dissertation References**

Your dissertation may cite a wide range of sources (e.g., papers or web sites that you have used) as background and context for the work. Sources are cited at the relevant point in the text and full source information is given in the references section. There are a variety of acceptable citation and referencing styles, but the most commonly used styles in Computer Science are the Harvard style and the IEEE style. These are briefly discussed below.

**Harvard (author-date) style**

The author's name and the date of publication are used in the body of the text when citing sources - e.g., (Jones, 2003). Variations are possible, for example we can say that Jones (2003) has developed a new technique. The bibliography is given alphabetically by author. Journal and book names are italicised, e.g.,


Notice that there is a lot of information about the articles cited, not just the title and author. This ensures that the reader can find the article in question. Find out what is expected for different types of article (e.g., books, conference papers) and aim to give as complete information as possible.

**IEEE style**

Here references are listed alphabetically but given a number. The citation number is used when citing the document in the body of the text (e.g., [2]). Differences in how the references are listed are otherwise minor.


You should select which style to use and use it consistently. Look up how to reference different kinds of sources, taking particular care with electronic sources. Give as much information about these as possible (title, author, date if possible) and consider just using footnotes for non-authoritative electronic sources. If you want to use another style apart from IEEE and Harvard then you should discuss it with your supervisor.

With the increasing use of Web sources you should take particular care how you cite these. You should make sure to put more than simply the URL, as URLs often go out of date. The guiding principle is that you should maximise someone's chances of finding the document. You should also state when the web page was last accessed, as web resources often change their location. One format that you can use is the following:

- Author's name, title of document, publisher, date of document, size of document, URL web address, (date last accessed)

For example, using the Harvard style we might have:

Whatever style you use the references section should come between the main text and the appendices. Normally references should start on a new page, and should not have a chapter or section number, just the heading "References". Some word processing tools may provide help with referencing - consider using these. However, the main thing is to give proper thought to how and what you cite.

**MSc Dissertation Style**

Style in technical writing is discussed in more detail elsewhere. See for example:


The main point to make is to present material clearly and concisely, and in an objective fashion as possible. Your personal impressions and feelings should rarely come into it. You should normally avoid using expressions like "I did this" and instead report the work in a passive voice ("It was done"). However, where you are genuinely voicing an individual opinion, you may use the first person. Also, while the passive voice is normal for scientific writing it is not used universally, so don't feel forced into a style that you find awkward. The main thing is clarity and objectivity.

While considering style we should re-iterate what has been said elsewhere about plagiarism. If you copy more than half a line directly from a source without quoting and citing it then it is considered plagiarism. If something is so good you want to cite it literally then do it like this:

Taylor provides a concise discussion of how we can quote material:

"While considering style we should re-iterate what has been said elsewhere about plagiarism. If you copy more than half a line directly from a source without quoting and citing it then it is considered plagiarism. If something is so good you want to cite it literally then do it like this."

[2]

Note that the copied material is in quotation marks AND the source is cited. Plagiarism detection tools use techniques like looking for any 7 successive words that are the same in the examined text and also occur in another text.

**MSc Dissertation Preparation Tools**

There are many tools to support document preparation, from LaTeX to tools built into Microsoft Word. Find out about them and use them. Spelling errors will not be acceptable if there are spelling checkers you could have used to detect them. Errors in referencing and poorly laid out graphics may be penalised where you could have used a simple tool to insert them for you.

**MSc Dissertation Assessment**

Your dissertation will be marked by your supervisor and by a second reader. If they disagree by more than a certain amount, a third marker will be brought in to ensure the appraisal is balanced. If it is borderline (close to an MSc with distinction mark or the lowest mark for an MSc or PG Diploma), it may also be looked at by the external examiner for the programme. So what are the assessors of your dissertation looking for? You will be given the assessment form that we use. We are looking for some or all of:

- Clear and concise presentation of work
- Demonstration of depth of technical understanding
- Coverage of related work; knowledge of the field
- Quality of any product
- Demonstration of ability to critically analyse other work and come up with original analyses and ideas
- Any contribution to knowledge.
- Evidence of initiative and perseverance
- Demonstration of professional conduct, considering ethical, social and legal issues where appropriate, and of course no evidence of plagiarism.
**MSc Dissertation Submission Procedures**

You should submit your dissertation in PDF format on Vision through the course F21MP. Your dissertation must have the standard front page which is also available on Vision. This PDF will be checked for plagiarism using Turnitin.

Your document should include a signed and dated declaration that the work is your own. The following form of words should be used:

"I <name> confirm that this work submitted for assessment is my own and is expressed in my own words. Any uses made within it of the words of other authors in any form e.g., ideas, equations, figures, text, tables, programs etc are properly acknowledged. A list of references employed is included."

This is a serious declaration and examiners may refer any dissertations with suspected plagiarism to the University disciplinary committee. Properly acknowledging sources means quoting as well as citing the source of any copied material.

For consistency’s sake you should even cite the source of this absence of plagiarism declaration.
Computer Science MSc Dissertation Assessment Grading Guidelines

The below criteria are indicative of what is expected for different grades. Markers will use these criteria as a guide while also using their subject expertise and academic judgement regarding the overall quality of the work.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Guidance Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+: ≥80%</td>
<td>Aims and objectives of project are stated and motivated both clearly and convincingly relative to state-of-the-art. The project demonstrates clear ability to formulate/construct hypotheses.</td>
</tr>
<tr>
<td></td>
<td>A very thorough understanding and excellent presentation of the subject, background material and context. Clear evidence of independent ability to find and use references and good citing and referencing.</td>
</tr>
<tr>
<td></td>
<td>A high degree of critical appraisal and analysis.</td>
</tr>
<tr>
<td></td>
<td>An excellent understanding and application of research methods.</td>
</tr>
<tr>
<td></td>
<td>Quality and description of programming/implementation and/or use of data show mastery of the chosen subject (if applicable).</td>
</tr>
<tr>
<td></td>
<td>Conclusions are clear, well supported by the content and well considered. Suggested future work is of research value. Clear evidence of originality of thought and reasoning and outstanding ability to comprehend the subject matter within the wider context.</td>
</tr>
<tr>
<td></td>
<td>The highest level of structure and presentation. Skilful use of well-chosen examples.</td>
</tr>
</tbody>
</table>

| A: Normally ≥70% <80% | Aims and objectives of project are stated and motivated both clearly and convincingly relative to state-of-the-art. The project demonstrates clear ability to formulate/construct hypotheses.                                |
|                       | A very thorough understanding and description of the subject, background material and context. Clear evidence of independent ability to find and use references and good citing and referencing.                                      |
|                       | A high degree of critical appraisal and analysis.                                                                                                                                                                                                                                  |
|                       | An excellent understanding and application of research methods.                                                                                                                                                                                                                                                     |
|                       | Quality and description of programming/implementation and/or use of data show mastery of the chosen subject (if applicable).                                                                                                                                                    |
|                       | Conclusions are clear and well supported by the content. Clear evidence of originality of thought and reasoning. Very well structured and presented. Good use of well-chosen examples.                                                                 |

<p>| B: Normally ≥60%, &lt;70% | Aims and objectives of project are clearly stated and motivated. Project demonstrates the ability to ask the right questions and formulate/construct hypotheses to address the issues.                                                            |
|                       | An increasing understanding of the subject, background material and context. Some evidence of independent ability to find and use references and good level of citing and referencing.                                      |
|                       | Critical appraisal and analysis is demonstrated.                                                                                                                                                                                                                                   |
|                       | Good understanding and application of research methods.                                                                                                                                                                                                                           |
|                       | Quality and description of programming/implementation and/or use of data is above the basic standard (if applicable).                                                                                                                                                    |
|                       | Appropriate conclusions and recommendations based on the presented work. Good structure and presentation, and good choices and use of examples.                                                                                                                                   |</p>
<table>
<thead>
<tr>
<th>Grade</th>
<th>Normally ≥50%, &lt;60%</th>
<th>Aims and objectives of project are reasonably stated and motivated. The student shows the ability to ask questions and find answers. A reasonable understanding of the subject, background material and context, suitable level of citing and referencing. A reasonable degree of analysis and critique of state-of-the-art in the context of the project’s goals. Acceptable consideration of research methods. Quality and description of programming/implementation and/or use of data is adequate to good (if applicable). Conclusions are reasonably formed and recommendations are generally supported by the work undertaken. Reasonable structure and presentation, appropriate choice and use of examples.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>Normally ≥40%, &lt;50%</td>
<td>Does not meet MSc standard. A basic piece of work which demonstrates: Limited clarity and motivation behind the project’s aims and objectives. Limited knowledge/understanding of the subject, background material and context, inadequate citing and referencing. Supported by only little analysis and critique. Poor or non-existent consideration of research methods. Only basic or incomplete implementation (if applicable). Identifies the basic issues, but conclusions are not supported. Meets the basic requirement for structure and presentation.</td>
</tr>
<tr>
<td>Grade</td>
<td>Normally ≥30%, &lt; 40%</td>
<td>Poorly stated, explained, or motivated aims and objectives. Very limited knowledge of the background material and context, inadequate citing and referencing. Little critical analysis of state-of-the-art in the context of the project’s goals. Very poor consideration of research methods. Implementation is incomplete or absent (if applicable). Inadequate discussion of the results with very poorly or unsupported conclusions Very poorly structured and presented.</td>
</tr>
<tr>
<td>Grade</td>
<td>Normally &lt;30%</td>
<td>As above, but one or more of the above listed components is missing, i.e. the dissertation shows: No evidence of knowledge of the background material and context, no proper citing and referencing or No critical analysis of state-of-the-art in the context of the project’s goals or No consideration of research methods or No implementation (if applicable) or No discussion of the results with supported conclusions.</td>
</tr>
</tbody>
</table>

All Dissertations must be conducted in an ethical manner and be ethically approved, and must cover Legal, Ethical, Professional and Social Issues arising in the project.
APPENDIX C

Assessment Methods and Procedures
Assessment Methods and Procedures

Postgraduate programmes consist of two phases:

- **A taught phase**, consisting of a set of 8 taught courses, some mandatory and some optional, defined in the programme structure, which the students will study over two semesters. Assessment of the taught phase is through a variety of methods including coursework and/or examination. Students must submit all elements of assessment before being permitted to progress.

- **A dissertation phase**, an appropriate research project and project dissertation report.

- Students will normally complete the taught phase, at which point progression to the dissertation phase is dependent on assessed performance. To progress students must meet the criteria stipulated in point 9 below in the taught material.

- Students meeting the required standards for Masters in the taught phase (set out in point 9 below) will be permitted to progress to the dissertation phase.

- Students meeting the required standards for Postgraduate Diploma and Postgraduate Certificate (set out in point 9 below) in the taught phase, but not meeting the Masters standard, will not be permitted to progress to the dissertation phase. Students may be recommended to graduate with a Postgraduate Diploma or a Postgraduate Certificate at this point.

- Students failing to meet the required standards for Postgraduate Diploma and Postgraduate Certificate (set out in point 9 below) in coursework and examination in the taught phase will not be permitted to progress to the dissertation phase, nor will they be eligible for any award.

- Any student will be able to retake the assessment of up to a maximum of 3 courses at the next opportunity, subject to payment of the appropriate fees to the University, and may be required to do so to obtain the necessary credits for completion of their programme or for progression. Students may only resit courses for which their grade is E or F although they may exceptionally resit ones graded at D if that is necessary to get their taught average high enough to be able to progress. The method of reassessment for each course is specified in the appropriate course descriptor.

- In any circumstance which it deems to be exceptional the Exam Board has the discretion to permit student progress or award, irrespective of student performance against required standards and policies.

Award and Progression Rules

1. To obtain an MSc Degree, candidates must gain 180 credits and must satisfy the examiners by achieving the required standards (set out in point 9 below) in two components:
   - Assessed taught material
   - Dissertation (set out in point 9 below)

2. To obtain a Postgraduate Diploma candidates must gain 120 credits and must satisfy the examiners by achieving the required standards (set out in point 9 below) in the assessed taught material.

3. To obtain a Postgraduate Certificate candidates must gain 60 credits and must satisfy the examiners by achieving the required standards (set out in point 9 below) in one component:
   - Assessed taught material
♦ The Examiners may specify certain courses as mandatory to achieve the award of Postgraduate Certificate, to reflect the nature of the course.

4. Taught courses will be assessed by a variety of techniques appropriate to the learning outcomes of the specific course.

5. All course work must be submitted before the due date. Late submissions will only be accepted with the prior permission of the Programme Director.

6. In exceptional personal or medical circumstances students may be granted leave by the examiners to redo part or all of the assessment on one occasion only and at a date decided by the examiners, as stated in university regulations 4 and 5. This provision is in addition to the provision that students may retake assessment for courses in which they have achieved a grade less than D.

7. Dissertations must be submitted on or before the publicised submission date; dissertations submitted after that date and without the prior consent of the Programme Director may be assessed at a penalty.

8. Allowance for poor performance in or non-submission of a component on medical grounds is normally made only where supported by written testimony from a professional health practitioner. Such testimony must be lodged with the Programme Director prior to the Examination Board meeting.

9. The level of achievement expected in each component is an average of:
   ♦ 40% for the Postgraduate Diploma and Certificate
   ♦ 50% for the MSc Degree

MSc candidates displaying exceptional merit by obtaining a credit weighted average of 70% or more (at the first attempt) over 8 courses and the dissertation at grade A may be recommended for the award of MSc with Distinction. Postgraduate Diploma candidates displaying exceptional merit by obtaining a credit weighted average of 70% or more (at the first attempt) over 8 courses at grades A-C may be recommended for the award of Postgraduate Diploma with Distinction. Both distinction awards are at the discretion of the Exam Board.

**Required Standards**
Candidates must achieve the following minimum levels of performance in:

**Assessed Taught Material**
♦ A credit weighted average across the 8 courses of 50% or better for Masters, with F21RP Research Methods at 45% or above and all others at grade D or above.
♦ A credit weighted average across the 8 courses of 40% or better for Postgraduate Diploma (120 credits) or a credit weighted average across 4 courses of 40% or better for Postgraduate Certificate (60 credits), with no course returning a result of less than grade E.
♦ All elements of assessment for each course must be completed to a satisfactory level (grade E)

**Dissertation**
♦ An average of 50% or better for Masters

**Notes:**
Exam scripts, coursework and dissertations could be seen by third parties for quality assurance purposes – e.g. External Examiners.
PART B: UNIVERSITY INFORMATION

The Academic Registry is responsible for producing Part B of the handbook to provide information and assistance on University policies and support services.

Please note that the following sections are standard sources of information provided to all students. However, certain aspects are programme-specific and you should refer to Part A where directed. Students are advised that the University will make changes to study programmes and progression requirements from time to time in accordance with strategic developments and it is therefore important to ensure that you check the most recent version of the handbook for up-to-date information.

B1. Our Values

At Heriot-Watt, we have an established set of values that help us to nurture innovation and leadership and show our commitment to continuous development in all our activities. They are:

- **Belong** to a diverse, inclusive and international community working together across boundaries and cultures
- **Inspire** curiosity to learn and find solutions that transform lives
- **Collaborate** by working in partnership to shape the future whilst taking responsibility for our own actions
- **Celebrate** excellence and take pride in the achievements of our students, staff and alumni

Find out more about the Heriot-Watt values [https://strategy2025.hw.ac.uk/our-new-values/](https://strategy2025.hw.ac.uk/our-new-values/) and what they mean to us.

B2. Student Partnership Agreement

Heriot Watt University and the Heriot Watt University Student Representative Bodies work in partnership to develop a Student Partnership Agreement (SPA) each year. The Agreement identifies the main, agreed priorities for working in partnership each academic year and outlines an associated action plan.

Heriot-Watt University has a long and proud tradition of student engagement in institutional governance and decision-making and the Student Partnership Agreement sets out our ambition to continue to work in partnership across all of our campus locations, with the aim of increasing engagement with the institution, enhancing the student experience and engendering a sense of belonging to the University community.

The Student Partnership Agreement is available [https://www.hw.ac.uk/services/docs/learning-teaching/policies/spa-agreement.pdf](https://www.hw.ac.uk/services/docs/learning-teaching/policies/spa-agreement.pdf)

B3. University Policies and Support Services

Heriot-Watt University has a detailed set of rules that governs the operation and management of University business. These are referred to as Ordinances and these Ordinances are set by the
Court, which is the governing body of the University. The Ordinances provide a regulatory framework for corporate governance. The University Ordinances are supported by University Regulations which provide a regulatory framework for the governance of academic-related matters which staff and student must adhere to for all academic matters. Wherever practicable, University policy is designed to include all members of the University’s community, both within and outwith the main campus environments.

Read more about the University Policies, Ordinances and Regulations.

As part of your University enrolment, you signed the Student Declaration and agreed to abide by the regulations of the University and conform to its policies, procedures, ordinances and regulations that underpin the Ordinances and Regulations. During your time at Heriot-Watt, the following policies, procedures, reference information and support services may be relevant and useful guidance for you.

B4. Your Student Portal

The Student Portal brings together your services and relevant information in one place. Below is a summary of the services available to you via the portal:

- Office 365 suite: through single sign-on, all of your Office 365 services will be accessible through the Portal.
- Library: whether you want to search for books or view your loans & reservations, the Portal allows you to do this on your phone or desktop.
- Vision: your Portal will present you with announcements and tasks related to your course.
- Student Information: all university-level regulations and policies relating to your studies can be found on the Portal.
- Campus and School News: the Portal enables the University to promote events and experiences which will help you develop your skills.
- Personalised: You can hide, add and move tiles on your dashboard.
- AskHWU: You can find everything you need to help you navigate your time at HWU through the new AskHWU search tile. Ask questions of the University and enquire directly with members of staff to get information about exams, enrolment, careers, wellbeing services and much more.
- Appointments: Book Careers & Wellbeing appointments through your student portal
- Need to speak to someone at the Student Service Centre? Use our app to join a queue to talk to our counter staff.

You can access your student portal here.

B5. Quick Finder Guide to Academic and Support Services

The following provides a guide to the academic and support services available to you during your studies which are arranged alphabetically under four heading:

- Learning and Teaching
- Our Community
- Supporting Success
- Developing Your Skills
Clicking on the subject heading allows you to find relevant information on the student web pages. Please make sure that you check myHWU the Student Portal, and the University web pages throughout the year for the most up-to-date information.

### Learning & Teaching

#### Academic Appeals
An academic appeal is a formal request by a student for the review of a decision made by the University on the student’s progression, assessment or academic award. There are valid and invalid grounds for an appeal. Appeals cannot be made on the basis of academic judgment (for example, thinking that your work deserves a higher grade). You are strongly advised to seek advice before starting an appeal, and to try and seek an informal resolution before making a formal appeal.

#### Assessment
Assessment is an essential part of learning at university. Make sure you are aware of the guidelines and regulations around University assessment.

**Assessment Feedback**
Heriot-Watt University aims to support students in becoming confident, independent learners; feedback is a key part of the student learning experience, as it is designed to help students to learn and improve. It’s also important to know what to do with the feedback when you receive it.

**Assessment Results:**
Once your course results have been released, you will automatically be sent an email (to your Heriot-Watt email address) to inform you that new assessment results are available online to view/download via the Student Self-Service (SSS).

**Examinations & Examination Diets**
There are three examination diets (assessment periods): December, Spring and the Resit Diet in the Summer.

**Exam Conduct and Identity Checks**
Make sure you know what is required and permitted within each of your exams and understand the University exam conduct.

**Exam Timetables**
Information on the exam timetable and when it will be available. Please note that exam timetables are subject to change so check regularly – we recommend checking the morning of each exam for any adjustments.

**Exit Awards**
You will receive an award if you successfully complete your programme of study, however, if you leave the University part way through your programme, you may still have met the required criteria for receiving a Certificate of Higher Education, a Diploma of Higher Education or an Ordinary/Bachelors Degree as an exit award (see also intermediate awards).

**External Examiners Information**
External Examiners ensure that students are judged fairly according to academic standards. In addition, they ensure that the processes for assessment, examination and determination of awards are sound and fairly operated.

**Heriot-Watt Assessment & Progression System (HAPS)**
The Heriot-Watt Assessment and Progression System (HAPS) specifies the key assessment rules to be followed in taught programmes of study.

**Intermediate Awards**
Certificates given before your final award are known as intermediate awards. Certificates for intermediate awards are not issued automatically when you have obtained sufficient credits.

**Learning and Teaching Matters**
Across our campuses and global community of students, we are promoting learning and teaching with a series of key messages to provide you with advice and information at crucial points during your Heriot-Watt experience.

**Periods of Study**
Refer to the regulation(s) that are appropriate for your level of study. These regulations will explain the maximum time allowed to complete a degree and the circumstances where this may be extended.

**Plagiarism**
Plagiarism is the act of taking the ideas, writings or inventions of another person and using these as if they were your own, whether intentionally or not. Here you can find out more about plagiarism, how the University responds to it and guidance on how to avoid plagiarism in your academic work.

**Reassessment**
If you fail an assessment during the first or second semester of an academic year, then you will have to sit a reassessment for that course before being able to progress. This page contains information on reassessment procedures, how to register and pay for reassessments on your campus, reassessment diet dates, and information about additional reassessment opportunities.

**Requirements for Awards**
Refer to the regulation(s) that are appropriate for your level of study. These regulations explain the number of credits required to receive an award from the University.

**Recognition of Prior Learning & Credit Transfer**
If you have previously been in higher education, have passed courses or have academically relevant professional experience, then this could count as credit towards your Heriot-Watt degree. In the linked page, scroll down to ‘Recognition of Prior Learning & Credit Transfer to view the policy and procedures relating to this, as well as other information.

**Submission of Coursework Policy**
You will have a set submission deadline for each piece of coursework. This policy explains how the deadline works.

**Teaching Timetables**
Use the link above to find out when and where your lectures, tutorials, or labs will be taking place on your campus.

**Use of Calculators in Examinations**
Refer to the link above to find out when you can use a calculator in an examination, and what kind of calculators are permitted.

**Use of Dictionaries in Examinations**
Dictionaries are generally not permitted in exams. However, the following link details the exceptions and circumstances when a dictionary may be permitted.

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**Our Community**

**Alumni**
Information on the opportunities available to students after they graduate from Heriot-Watt. These include membership of The Watt Club (Heriot-Watt’s alumni association), how to network and connect with other alumni, and how alumni can give back to the University after they have left.

**Accommodation**
Information about student accommodation at each of our campuses
- Accommodation (Dubai Campus)
- Accommodation (Edinburgh Campus)
- Accommodation (Malaysia Campus)
- Accommodation (Scottish Borders Campus)
- Accommodation (Orkney Campus)

**Faith and Belief**
Heriot-Watt University respects religious and cultural diversity and aims to support individuals in their religious and cultural observance.
- Faith and Belief: Edinburgh Campus
- Faith and Belief: Scottish Borders Campus
- Faith and Belief: Orkney Campus
- Faith and Belief: Dubai Campus
- Faith and Belief: Malaysia Campus

**Sport and Exercise**
Opportunities for a range of sport and exercise activities are available at all our campuses
- Sport and Exercise: Edinburgh Campus
- Sport and Exercise: Scottish Borders Campus
- Sport and Exercise: Orkney Campus
- Sport and Exercise: Dubai Campus
- Sport and Exercise: Malaysia Campus

**Student Representation**
All students have representative bodies for their campus who will also oversee clubs and societies and organise events for students.
- Heriot-Watt University Student Union (Edinburgh, Orkney and Scottish Borders Campuses)
All Heriot-Watt students at Scottish campuses are a member of the Student Union. In addition to the wide range of societies, the Student Union offers volunteering opportunities for students to get involved in and make friends and connections during their time at university. The Union regularly hold events and host campaigns for good causes. The Student Union can also provide advice and support for all Heriot-Watt students via the Advice Hub.
- Heriot-Watt University Dubai Student Council is the primary representative body for all students at Dubai campus. Further details can be found on the Student Council’s Facebook page.
Heriot-Watt University Malaysia Student Association represents students at Malaysia campus, manages clubs, implements welfare projects and organises events for students.

Supporting Success

**Academic Registry**
Academic registry is part of the professional services and covers information on Registry Operations and Academic Quality. Registry operations can help with student enrolment, examinations and assessment, graduation and timetabling. The academic quality service provide support on a number of policies across the University.

**Amendment to Enrolment**
Amendments can be made to a student’s enrolment at any point during their studies. This can include Temporary Suspension of Studies, extension of study period or amendment to study level or method.

**Assistive Technology**
We have a variety of assistive technology available at Heriot-Watt University. Our Technology Assistant is here to help you with the enabling technology that we have and can assist you with any queries or support needs.

*Assistive Technology at Edinburgh Campus*
*Assistive Technology at Scottish Borders Campus*
*Assistive Technology at Orkney Campus*
*Assistive Technology at Dubai Campus*

**Attendance and Absence**
It is extremely important that you keep the University informed if you are unable to attend classes. Absence may affect your academic progress, so you should discuss with your personal tutor whether you may need to temporarily suspend your studies or apply for Mitigating Circumstances. If you are unable to attend an exam or complete an assessment due to an unforeseen absence beyond your control, such as significant illness, you will need to make an application for consideration of Mitigating Circumstances in writing with supporting evidence.

**Big White Wall**
Big White Wall is an online support resource 24 hours a day every day which you can sign up to with your university email address then choose an anonymous username for your time on Big White Wall. You can use Big White Wall for help with a wide range of mental health and wellbeing issues.

**Care Experienced Students**
We recognise that individuals with care experience are under-represented in higher education and are committed to offering support for these applicants to study at Heriot-Watt. We can provide access to the advice, guidance, financial support and accommodation required to allow those with care experience the opportunity to succeed at university. We offer a named point of contact and support within the University, from pre-entry advice through to support during your time at the University.

**Caring Responsibilities**
Heriot-Watt University is committed to supporting students who are carers. A carer is anyone who cares, unpaid, for a friend or family member who due to illness, disability, a mental health problem or an addiction cannot cope without their support.

**Change of Address**
For legal, academic and administrative purposes it is very important that the information the University holds about you is correct and up to date, including your address details. You can check and amend your personal information by logging in to [Student Self Service](#).

**Childcare**
There is a nursery based at Edinburgh campus run by an independent company called Pinocchio's. At Scottish Borders campus the Osito Nursery is near the campus and provides childcare for children aged between four weeks to eight years old. You are advised to ensure that any nursery or childminder you use is registered with the Care Commission. Information about childcare provision in your area is available from the [Scottish Family Information Service](#). You may be eligible for help with childcare fees through the Childcare Fund. Students wishing to apply must be home students who are fulltime, undergraduate and eligible for student loan support. Students must have applied for the maximum student loan available.

**Complaints**
If for any reason you are unhappy with action taken (or not taken) by the University, or by the standard of service you have received, you may be able to make a formal complaint using the University’s Complaints Procedure.

**Counselling**
Being a student can be a very positive experience but there are also many challenges to deal with such as being away from home, being in a new country, exam pressures and building new relationships with friends. If you are worried about any issue or are thinking about dropping out of University we can offer you counselling, support, and information to help you deal with the difficulties you may face. It may be that you only need one appointment but can attend more if you wish.

**Data Protection**
Information about how the University uses and protects data.

**Disability Support**
The Disability Service can provide support and advice for students with a range of disabilities. It is important that you inform us if you have a disability so the appropriate support can be arranged and you may be eligible for additional funding from the Disabled Students Allowance.

**Discipline**
The University can take action against any student if they have committed an academic offence (such as plagiarism, collusion or cheating in an exam) or a non-academic offense such as improper use of, or damage to, university property, or unacceptable behaviour.

**Discretionary Credit** (Please refer to the appropriate Regulation[s] for your level of study.) A student who has not achieved the minimum number of credit points necessary to qualify for consideration of an award or the minimum number of credit points to progress from one stage to another may be awarded the requisite credit points at the discretion of the Award Board or Progression Board, as appropriate.

**Email**
Make sure you keep checking your Heriot-Watt email at least every day and use it if you need to contact the University. Sometimes mail from personal e-mail addresses is blocked by the
University’s IT systems, so use your Heriot-Watt e-mail to be sure your message gets through to us.

**Enrolment**
Enrolment is the formal process of becoming a student of the University, agreeing to abide by its rules and accepting any liability for fees or other costs associated with your studies. All new and continuing students must be enrolled while studying at Heriot Watt University. The enrolment process must be completed online at the start of each new academic year.

**Equality and Diversity**
As well as meeting our legal requirements, we make sure that people across the University Community understand how they contribute to a Culture of Inclusiveness for All. This holistic approach helps us maintain an open and accessible working, living and learning environment where all are supported to reach their full potential.

**Erasmus+**
Erasmus+ enables you to study or work in Europe as part of your degree programme, usually for a full academic year. At Heriot Watt students have the opportunity to study at a wide range of institutions in Europe.

**Exchanges**
An exchange can be arranged with an institution abroad. This can be arranged with your school Exchange Coordinator but it is the responsibility of the student to complete the application for that institution.

**Failing a course**
Failing a course may be a setback, but it is not necessarily a disastrous one. Students who have failed can go on to pass resits and still graduate with a good degree. If you fail a course it is important you discuss this with your personal tutor in the first instance. Your personal tutor will be able to offer advice on how to obtain detailed feedback and suggest sources of support.

**Go Global**
Go Global is the University’s inter-campus transfer opportunity and offers students the opportunity to study at a different Heriot-Watt campus.

**Graduate Attributes**
Through your experience at Heriot-Watt University you will develop the skills and qualities of the four graduate attributes: specialist, creative, professional and global.

**Graduation**
All the information you need to apply for and attend your graduation ceremony.

**Guide to Student Life**
This A to Z guide aims to provide you with essential information on a range of issues you may encounter.

**Harassment and Bullying**
Heriot-Watt University is committed to a working, learning and living environment that is free of discrimination and intimidation. If you feel that the

**Health and Wellbeing**
During your time at University it is important to look after yourself and use the resources available to help you with this, including Wellbeing Services, and medical and dental services.
Ill Health & Mitigating Circumstances
There are circumstances which, through no fault of your own, may have affected your performance in an assessment (exams or other assessment), meaning that the assessment has not accurately measured your ability. These circumstances are described as ‘mitigating circumstances’ (previously ‘special circumstances’). You can submit an application to have mitigating circumstances taken into account.

Library Essentials
Library essentials covers how to navigate the library service across campuses at the University. If you need to borrow a book or book out a study space this can be accessed from the library essentials webpage.

Library Resources for your Subject
There is a dedicated Academic Support and Liaison Librarian for each School. See also the subject guides for useful information about books, journals, and online resources for each subject area.

Managing Your Money
As a student you will find there is a lot to think about financially. For some of you, studying at university will be the first time you have had to manage your money and keep your expenditure within a fixed budget. Advice and support on money matters is available at all Heriot-Watt campuses.

Maternity and Paternity
The University has a set of published guidelines to ensure that students who become pregnant during their studies know where to seek advice and support, including on matters such as returning to study following a period of maternity leave and on requests for shared leave or paternity leave.

Mental Health
If you experience a mental health difficulty while at the University you can discuss any issues and concerns with a professional counsellor or Student Advisor.

Next Steps: Post result help
Next Steps is a simple guide that can help you after you have received your course assessment results. The guide has information about importance of obtaining feedback from your assessments, and how to reflect and act on feedback to ensure you are more successful in your studies.

People Finder
Find a key person on campus by using People Finder.

Personal Tutors
Every student has a member of academic staff allocated to them as a personal tutor who is your first point of contact if you need advice on any issue, both academic and non-academic. Personal tutors can also advise you of other support sources as appropriate. The name of your personal tutor is available on Student Self Service.

Sexual Misconduct
The University is committed to providing a safe environment that allows you to work, study, and fulfil your potential without fear of sexual misconduct and has a policy to combat sexual misconduct.

Student Success Advisors
Nobody knows the challenges of being a Heriot-Watt student better than those who have been through it all themselves. With the benefit of recent experience and successful study at Heriot-Watt, the Student Success Advisors will be able to offer advice to students based on their own experiences. They will also have an overview of the other support resources available at Heriot-Watt and point you in the right direction if you need it.

**Student Service Centre**
The Student Service Centre offers help and support relating to matters on enrolment, examinations, paying tuition fees, graduation, as well as advice for students holding a visa.

Dubai Campus: please contact dubaistudentservices@hw.ac.uk

Edinburgh Campus

Malaysia Campus

**Student Fees, Funding and Additional Charges**
The University can give you advice about paying your tuition fees as well as information on scholarships and bursaries, and other means of financial support.

**Student Policies and Guidance**
Our list of student policies can give you information on University regulations and guidance relating to issues including attendance, mitigating circumstances, mental health, and programme transfer.

**Student Support Services**
Information on our Disability and Careers services, as well as information for students who are care experienced or have caring responsibilities.

**Student Surveys**
Feedback from students is extremely important as it allows the University to further improve and enhance what it offers to students. Surveys give students the opportunity to feedback their thoughts and opinions to the University.

**Students With Caring Responsibilities**
The University seeks to support students who care “unpaid, for a friend or family member who due to illness, disability, a mental health problem or an addiction cannot cope without their support”.

**Temporary Suspension of Studies**
In certain situations it may be in a student’s best interests for them to suspend their studies temporarily to enable them to deal with particular issues and return at an agreed date. A Temporary Suspension of Studies (TSS) can be applied for and approved on the basis of genuine medical, personal, financial reasons or military service.

**Thinking of Leaving**
If you are thinking about leaving university for whatever reason please talk through your decision with a member of staff at the university. Many students think about leaving university at some stage during their studies. If anything is bothering you or you are thinking about leaving, you can come along to a drop in to speak to a member of support staff to explore and understand all of your options.

**Visa Advice**
Advice on visa requirements for studying at Heriot-Watt is available at all our campuses.
Virtual Learning Environment (Vision)
Vision is Heriot-Watt’s Virtual Learning Environment (VLE) and is a vital learning and communication tool for you and your lecturers, so make sure you log in and check Vision every day. A Student Guide to VISION can be found [here](#).

Developing Your Skills

**Careers**
Careers advice and guidance is available to all students and recent graduates to help:
- Develop your employability skills
- Identify your potential career options
- Help you to find work experience/part time work
- Market yourself to employers

**Careers: UK Campuses**
Careers: Dubai Campus, contact Benita Maben, Careers Advisor, [B.Maben@hw.ac.uk](mailto:B.Maben@hw.ac.uk)
**Careers: Malaysia Campus**, contact [MYCareers@hw.ac.uk](mailto:MYCareers@hw.ac.uk)

**Career Mentoring**
Career Mentoring can connect a student with a professional working in a student’s area of interest. The programme gives students an opportunity to gain an insight into what it is like working in a certain field. A mentor will also be able to support a student with their long-term career planning. This programme is mostly aimed at students in their penultimate year, however all students are welcome to apply.

**Enhanced Transcript**
An Enhanced Transcript is a formal University document which will include not only details of your award and grades, but also a range of academic and extra-curricular activities undertaken whilst at University. The Transcript is designed to help you to maximise your employability as it records your University achievements in one document which you can share with prospective employers and postgraduate recruiters.

**Skills Development**
Studying at university gives you the opportunity to learn new skills or build on existing skills you already have. Information Services provide many workshops and resources to help you gain or develop the skills you will need to have a successful time at university.

**Study Spaces**
Heriot-Watt provide a large number of modern and contemporary study spaces for both individuals and groups in convenient locations. Some of these spaces are open late, and offer IT access as well as food and drink.

**Volunteering**
Volunteering offers you the opportunity to develop your skills and experience while helping your fellow students, your community or a charitable organisation. There are numerous opportunities for [volunteering](#) within and outside the University. The Careers service also provide [advice](#) on volunteering. Your experience as a volunteer can be logged and evidenced, and help enhance your employability.